THE JOURNAL

OF

Foreign Medical Science

AND

LITERATURE.

VOL. III. OCTOBER, 1823. No. 12.

Selected Papers.

Researches on the Pathological Anatomy of the Digestive Canal, considered in its Sub-diaphragmatic Portion. By M. ANDRAL, Jun. M. D.

(From the London Medical Repository for May and June, 1823.)

Concluded from p. 411.

When a perforation of the intestines supervenes in an individual labouring under typhus fever, with prostration of strength, and remarkable diminution of the general sensibility, it is not always easy to detect the peritonitis occasioned by it. In cases of this kind, in fact, we have seen the patient exhibit no signs of pain, even when the abdomen was strongly pressed upon, in any and every part. The sudden alteration of the features, the unusual tension of the belly, the change in the pulse, which becomes suddenly small and hard, may, at such times, cause us to suspect the existence of inflammation of the peritoneum: acute peritonitis, without pain, supervening on perforation of the stomach and occurring in fever, has been noticed by Morgagni.

Finally, we have seen peritonitis, occasioned by a solution of continuity in the parietes of the intestines, observe a chronic progress. A young man labouring under phthisis pulmonalis had had a copious diarrhœa for a long time: the abdomen had always been without pain. One day he complained of violent pain round the umbilicus; pressure increased it: it was regarded as the product of the inflammation, of which the digestive tube was the seat: this continued incessantly, but not severely, during eight or ten days; none of the other symptoms became

aggravated in a remarkable manner: the patient suddenly felt his abdomen wetted by a tolerably large quantity of liquid, and perceived that a linear crack existed at the umbilicus: during the day an ascaris lumbricoides was discharged, along with a yellow liquid, similar to that commonly contained in the small intestines. Was it not reasonable to suppose that a portion of the intestine had been perforated; that by the aid of partial adhesions contracted between it and the parietes of the abdomen, no effusion could take place into the peritoneum; and that the abdominal parietes had, in their turn, become inflamed and perforated? Was it not, in a word, a preternatural anus which had been formed? On the following days, however, a small quantity of liquid continued to be discharged by the fistula; the abdominal pain was somewhat intense. The patient, who had arrived at the last stage of pulmonary consumption, succumbed twenty-seven days after the first appearance of pain, and about eighteen days after the formation of the fistula. The traces of a dreadful peritonitis were discovered. The intestines were united into one mass by black and very thick false membranes: a quantity of greenish liquid was effused between the folds of the intestines; it was there retained by membraneous bands, which formed the parietes of a number of small cavities: no adhesion existed at the umbilical region: in the peritoneum two ascarides lumbricoides were found; their presence did not permit a doubt regarding the existence of an intestinal perforation, but the adhesions were so multiplied and so intimate, that it was impossible to discover it.

Stoll has related the case of a young man, who, after having laboured for six months under frequent vomiting and diarrhœa, was seized with violent pain in the abdomen after having taken cold: the twelve following days, he walked a considerable distance, each morning, in order to receive his medicine at the hospital; on the twelfth day he proceeded on foot as usual. The abdomen was tense and painful to the touch, countenance anxious and emaciated, pulse very frequent and small. He died in the evening, a short time after having himself given the preceding details. The peritoneum contained a bloody fluid, mixed with liquid stercoraceous matter. The ileum, not far from the cæcum, presented a hole sufficiently large to admit a filbert. The whole of the digestive tube was, moreover, inflamed.

There are some fortunate cases in which perforation of the intestine has not been followed by effusion into the peritoneum. Thus we have seen one of these perforations comprised between the two laminæ of the mesentery, out of the cavity of the serous membrane. We have also seen the spleen exactly applied upon the perforated stomach at its great *cul-de-sac*, without adhering to it, prevent any effusion. Professor Chaussier has observed

some facts of this kind. Can we believe that, except in these rare cases, perforations of the digestive tube may take place during life, without consequent peritonitis? The anatomists who say they have observed this fact, may they not themselves have occasioned the perforation by pulling the intestinal tunics previously softened or deeply ulcerated?

Inflammation of the intestines may, like that of other parts, determine by suppuration and gangrene.

Suppuration is commonly established at the free surface of the mucous membrane; but in some more rare cases it is beneath it, in the meshes of the laminated tissue, that pus is formed, collects in *foyers*, and constitutes a sub-mucous abscess similar to the abscesses which frequently form in the tonsils. Similar purulent collections are extremely rare in the sub-diaphragmatic portion of the digestive tube. We have witnessed an example in the duodenum: at two fingers' breadth below the pylorus, a tumour projecting into the interior of the intestine, but not visible at the exterior, appeared; it was soft, fluctuating, and of the size and form of a cherry: the mucous coat, raised up and separated at this part, had preserved its white colour. On cutting into the tumour, a white inodorous liquid of the consistence of cream, was discharged, which presented all the qualities of healthy pus. It was collected in the laminated tissue, the laminæ of which it had separated in such a manner, that the muscular membrane lay exposed below the collection.

We have several times observed in the lowest quarter of the ileum, beneath the mucous coat, when in a state of inflammation, small white maculæ of the size of a lentil, formed by a pearl-coloured liquid; changing its situation, and spreading *en nappe* when the mucous coat was pressed upon. It appeared as if some pus had been effused into the sub-mucous cellular tissue, which had occasioned the formation of a crowd of small *foyers*, in every part where the inflammation had been the most acute, or where the cellular tissue had yielded the most to distention. It is not uncommon to find, in the sub-arachnoidean cellular tissue, purulent collections, appearing like those of which we have just spoken, under the form of small white isolated maculæ, and, like them, capable of being displaced by pressure.

Authors have spoken much of *abscesses*, formed in the *stomach*, and having been discharged by vomiting. I have never witnessed a case of this kind.

Gangrene of the intestines, also, seems to us less common than has been for a long time imagined. Open the different works in which dissections are related, and you will find that their authors speak incessantly of *intestines gangrenous* and sphacelated in a great part of their extent; but unfortunately

no one amongst them has described the lesion which he regarded as constituting a gangrenous condition. It is, at least, doubtful whether the brown colour of a more or less extensive portion of the mucous membrane, with softening of its tissue, should be considered as a sign of mortification. Of these derangements of the mucous coat we have already spoken.

There are diseases, as typhus fever, however, in which it is not uncommon to find on the internal surface of the digestive canal, real eschars, similar to those of the skin. Sometimes these eschars are formed at the expense of the laminated tissue which constitutes the face of the ulcerations: at such times it is found thickened, black, or rather of a dirty greyish colour, and of a putrescent consistence, like the *detritus* which exists at the surface of wounds struck with hospital gangrene.

Sometimes the mucous membrane itself, when inflamed, terminates in gangrene. An ulcer succeeds to the falling off of the eschar which results from it. It has appeared to us, that gangrene has tended to develop itself more frequently in the centre of the circumscribed and elevated patches of which we have spoken above. We have sometimes been able to trace, in the same subject, the formation of the eschars in the different *phases*. We observe, for example, at the end of the small intestine, oblong elevations of a brownish red, formed by the thickened mucous coat. In other places, a part of these elevations is changed into a hard tissue of a yellowish brown colour; repeated washing and long maceration cannot efface this tint. All those who have seen this morbid appearance, have not hesitated to compare it to the eschars, with which the surface of blisters is sometimes covered. The gangrened portion, moreover, is already partly detached; it no longer shows itself except in isolated points, in the interval of which ulcerations exist; the base of these is sometimes white, sometimes of a deep brownish red, according as the cellular tissue which forms it has, or has not, participated in the inflammation. In some ulcerations, the eschar, detached in one portion, only adheres to their edge by a thin pedicle; other ulcerations no longer present any trace of it. We have only once witnessed one of these eschars in the stomach: the end of the small intestine and the cæcum are their most common seat. Almost every time we have met with them, their formation has seemed to have coincided during life with the mortification of blisters. Were it not wandering from our subject, we might deduce some important considerations from these facts, both on the nature of the disease, and on the mode of treatment proper for it. These we shall make the subject of another work.

We have now passed in review the anatomical characters of inflammation of the digestive tube; the lesions which it pre-

sents appeared to us sufficiently distinct, to enable us to establish three stages of this inflammation, in the same manner as M. Laënnec has established three stages in pneumonia, according to the different states of the lung. In the first stage there is simply a more or less strong injection of the mucous coat. The second stage is marked by alteration of its texture, whether it be thickened, softened, or exanthematous. This alteration may, or may not, extend to the other tunics. In the third stage the mucous and subjacent tissues become disorganized and ulcerated.

The second and third stages can never be mistaken; but not so with the first. In the same manner as sero-sanguineous *engorgement* of the lungs, supervening, only, during the latter periods of life, may be easily confounded with the first stage of pneumonia; so may the mechanical *stasis* of the blood in the mucous coat of the digestive organs or beneath it, be mistaken for an inflammation of these parts. We shall endeavour to offer some considerations which may prevent us from committing a similar error. Whenever, some hours previous to death, the return of the venous blood towards the right cavities of the heart, has experienced a considerable interruption, the parietes of the intestinal canal are found more or less strongly injected in several parts. The obstacle to the return of the blood towards the heart may be seated either in the heart itself or in the lungs. In each case, the blood, which no longer penetrates these two organs but with difficulty, reflows towards the liver, which becomes engorged in its turn, and is no longer able to admit that which is brought to it by the vena portæ. The ramifications of this vein therefore remain filled; they receive at the same time a fresh quantity by the arteries until death, and sometimes even after death. Hence proceeds the injection of the parietes of the intestinal canal; this injection is more lively and more common than that of any other part, either in consequence of the number and size of the vessels, or owing to the presence of the liver: into which the greatest part of the blood received by the right side of the heart, even that which is brought to it by the vena cava superior, reflows and accumulates as in a reservoir. If, in fact, as we have seen done by M. Magendie, we inject sulphuric acid into the jugular vein of a living animal, the hepatic vessels are found filled with coagulated blood. It is only when the engorgement of the right side of the heart and of the liver has reached a very high degree, that the other parts are found also injected with blood after death. At such times the skin is marbled with livid streaks; the cerebral membranes are of an intense red; the brain itself is covered with an infinite number of small red points; an enormous quantity of blood streams out from all the parenchyma-

tous tissues; the inter-muscular, sub-serous, and sub-arterial, cellular tissues, are overrun by a multitude of small vascular ramifications, &c.

But the purely mechanical injection of the intestinal parietes itself presents several degrees.

In its mildest degree, the laminated tissue underneath the mucous coat is found overrun by large veins filled with black blood: they give to the stomach, when viewed internally, a marbled appearance: in the intestines they form, by their multiplied anastomoses, numerous arborisations; they exist, in great quantities, in the folds of the small intestines, which, being deeply situated in the hollow of the small pelvis, present, owing to their inclined position, a fresh obstacle to the return of the blood.

This first degree, which consists in an injection of the great vessels of the sub-mucous tissue, must not be confounded with the inflammatory injection which is seated in the vessels of the mucous membrane.

But in a second degree, besides these veins gorged with blood, the laminated tissue presents a crowd of small vascular ramifications which extend in several parts to the mucous coat: at such times this membrane presents, at greater or less intervals, patches of a brownish red, formed by the agglomeration of several almost capillary vessels, strongly injected. When less numerous, they form, in the mucous coat, small red isolated or united points: when more multiplied, they produce long, red, or brown bands.

Sometimes, sanguineous infiltration, true ecchymoses, with or without injection of the mucous coat, are discovered in the laminated membrane.

Finally, in the highest degree of this mechanical injection, the mucous coat exhales blood at its free surface: this we have witnessed in several subjects. Boërhaave had already observed that when the blood which returns from the intestines cannot pass through the vena portæ, owing to its being obstructed, it flows into the intestines.

This sanguineous exhalation, joined with the interruption of the circulation, is equally observed in other parts. The tissue of the lung, the cerebral substance, the parts of the skin deprived of epidermis, becomes sometimes its seat in individuals labouring under aneurism of the heart. The bronchiæ are often filled with a bloody fluid during the last moments of the life of consumptive individuals, who have experienced a long agony.

These phenomena, exhibited to us on the inspection of the dead body, experience may produce on living animals. By slowly depriving them of life, we see their digestive tube, which is pale or of a rosy white in the ordinary state, becomes inject-

ed and strongly reddened. An intense coloration of the intestines may be also obtained by tying the trunk of the vena portæ. This fact was known in the time of Morgagni: he relates, that after the ligature of this vein, the intestines quickly acquire the colour of cochineal, and that a sanguineous exhalation sometimes takes place at their internal surface.

From the whole of the preceding facts, it results that, when any stimulus affecting the intestines has only occasioned their injection, without having yet altered their texture, it is often difficult, and sometimes impossible, to distinguish this inflammatory injection from one which has been purely mechanical. It is necessary, therefore, to attend either to the symptoms which preceded death, or even to the kind of death; to observe the state of the lungs, of the right heart, of the liver, and of the system of the vena portæ: finally, in some cases we must be compelled still to remain in doubt.

Article II. *Adventitious Tissues.—Tubercles.*—We seek in vain, in ancient authors, for an exact description of the tubercles which develop themselves in the parietes of the digestive tube. They have all, at most, been indicated in a vague manner by some. Thus, Bartholin says he found the intestine full of purulent tubercles in an individual labouring under chronic dysentery. Bonet appears to have spoken of them under the name of apostemata. Brunner seems to have regarded them as mucous follicles preternaturally developed. It is somewhat astonishing that they should not have fixed the attention of Morgagni.

Intestinal tubercles are, in fact, one of the most common affections. They exist in the majority of individuals labouring under phthisis pulmonalis. In the majority of cases they only supervene consecutively on the tuberculous degeneration of the lungs: at other times they precede it, and drag the patient to the grave, before any symptom has declared itself in the chest. It is very rare to meet with tubercles in the intestines of individuals whose lungs contain none of them. Of all the parts of the digestive tube, the end of the jejunum and the ileum are those in which tubercles most frequently develop themselves. We have much less frequently met with them in the commencement of the first of these intestines, as well as in the duodenum. More rarely still are they observed in the cæcum, and in the ascending and transverse colon. We have never found them in the other portions of the large intestine: we once only met with an isolated tubercle in the stomach.

Tubercles constantly arise in the midst of the cellular layers which unite together the different coats of the intestine. Rarely existing in the sub-peritoneal cellular tissue, they show themselves most commonly in the midst of the meshes (*mailles*) of

the sub-mucous cellular tissue. At their origin, they appear under the form of white points, having scarcely the volume of the head of a small pin. They are perceptible through the mucous membrane, which above them has preserved its healthy state. They become gradually enlarged, and finally acquire the size of a pea. We have never seen them of a larger size. Under such circumstances, they appear under the form of small round masses, of a dull white, generally isolated from each other, and very rarely agglomerated, like pulmonary tubercles. They project beneath the mucous membrane, which they raise up. The internal surface of the intestine around them is most commonly pale or somewhat injected.

By gently passing above them the blade of a scalpel, the mucous coat which covers them may be elevated, issue is given to the tuberculous matter; and in the place which it occupied, a small cavity exists, with white, elevated, and round edges, perfectly similar to an ulceration. Sometimes, in the whole extent of the canal, no other lesions are discoverable than those tubercles, such as we have just described them; they are then in their state of crudity. But in the majority of instances, there exist, at the same time, ulcerations of various forms and sizes, at the base of which the *debris* of tuberculous matter is often discovered. A perfect analogy seems to us to exist between the formation of these ulcerations and that of tuberculous ulcerations of the lungs. In the midst of the parenchyma of the lungs, as well as the intestinal mucous coat, tubercles at first develop themselves, without the tissue surrounding them seeming in any manner inflamed. In the lung, as in the intestine, we frequently see these tubercles exist in the part of this organ which is not inflamed; whilst the parts where we do not meet with them present evident signs of recent or chronic inflammation. To this it may be objected, that where the tubercles are developed a previous inflammation had existed, which, having disappeared in time, had left no other trace than the presence of the tuberculous matter. But this can only be a supposition.

In the lung, as in the intestinal canal, tubercles, in proportion as they become soft, occasion either the erosion and complete destruction of the parietes of the bronchiæ with which they are in contact, or of the digestive mucous coat below which they have taken birth, and eat a route outwardly. At such times, in the parenchyma of the lung, as at the internal surface of the intestine, a cavity exists, the parietes of which become inflamed, and secrete a purulent matter, the quality and quantity of which are very variable. We have frequently witnessed in intestines full of tubercles, ulcerations which had a very great resemblance to pulmonary vomicæ; like the latter, they represented anfractuous cavities, separated by bands of an irregular form.

In some cases, at the same time that the tubercles raise up the mucous membrane which they tend to destroy, they develop themselves also on the side of the muscular coat; separate its fibres, and come in contact with the peritoneum, which, in the same manner as the mucous coat, ends in becoming destroyed. Hence results a solution of continuity of the intestinal parietes, which remains sometimes filled up for a greater or less time by a tuberculous mass. We have observed a similar disposition.

We have just seen that tubercles may arise and develop themselves without previous inflammation, but we frequently also observe traces of an intense inflammation in the portion of intestine where they exist. It is not rare, for example, to find the base and edges of intestinal ulcerations, in individuals labouring under chronic diarrhœa, sprinkled with tubercles still crude. It even seems that inflammation favours their development; and it is almost solely in this case that they are found pressed and agglomerated together.

If we now consider intestinal tubercles as regards the symptoms which announce them, we shall again find several points of relation between them and pulmonary tubercles. Like the latter, they may, when not numerous, exist a long time without any symptom occurring to lead us to suspect their existence. Thus we have found the intestinal mucous membrane raised up by tubercles still small, and a little numerous, in phthisical subjects who have never had diarrhœa: other individuals, whose intestines are in a similar state, have not constantly diarrhœa, but in them it manifests itself under the influence of the slightest cause: exposure to cold or humidity, and the least error in regimen, produce it. It is thus that the pulmonary mucous membrane is very easily irritated in persons whose lungs contain a small quantity of tubercles still crude. But these multiplied irritations hasten, in their turn, the discharge of the tuberculous matter either into the lungs or intestines. The diarrhœa does not appear to become considerable and permanent until ulcerations have succeeded to the softening of the tubercles. The formation and development of intestinal tubercles are generally accompanied with very little pain: it is the same also with the ulcerations which succeed them. Many patients affirm that they have never experienced any abdominal pain: others feel from time to time slight and very supportable colics. Some, however, do complain of tolerably severe pain. After death, no lesion is discoverable capable of explaining these differences.

We have sometimes observed, in different portions of the small intestines, miliary granulations similar to those which develop themselves in the parenchyma of the lungs. On passing the finger over the internal surface of the intestine, we find

a crowd of small rough bodies of the size of a millet seed. Their transparence, their, as it were, cartilaginous hardness, distinguish them from tubercles properly so called, which are soft and opaque. Moreover, they are developed in the tissue of the mucous coat, and not below it like the tubercles, as it is easy to verify by detaching that membrane: they come away with it.

Scirrhous and Encephaloid Tissue.—We have just seen that the stomach and rectum are the two portions of the digestive tube in which tubercles are most rarely developed. They are, on the contrary, those, where the scirrhous and cerebriform, or encephaloid tissue, most commonly appears.

These tissues may arise primitively, either in the mucous coat itself, or beneath it.

When they arise beneath the mucous coat, we observe them, at first, invading the laminated tissue: they may acquire a considerable size, and form even tumours projecting through the parietes of the abdomen, before being propagated either to the muscular coat, the muscular fibres of which may be easily dissected from beneath them, or to the mucous coat, which is found every where white and sound. But, most commonly, if the cancerous tumour be at all considerable, we no longer observe any trace of muscular fibre; the mucous coat ends in becoming disorganized and destroyed, and the internal surface of the stomach then presents an ulcer of a greater or less extent, the edges of which are formed by the mucous membrane, irregularly divided, (*decoupée*) and the base by the scirrhous and encephaloid tissues, in a state of crudity or softening. In proportion as they pass from this state, they become destroyed, and perforation of the parietes of the stomach takes place sooner or later. But sometimes, as we have already seen, the contents of this viscus are effused into the peritoneal cavity, whence fatal symptoms arise; sometimes, by a happy artifice of nature, cellular adhesions established between the circumference of the ulcer and a neighbouring organ, prevent effusion from taking place. We have frequently seen the liver and the pancreas form the plug. In the cases of this kind which we have observed, we have never found the pancreas diseased. As for the liver, we have sometimes found its tissue uninjured beneath the greyish or reddish *detritus* covering the base of the ulcer; occasionally we have seen it participating in the cancerous degeneration to the extent of some lines only, beyond which it was healthy. Finally, at other times the disease seemed to have been propagated from the liver to the stomach, which latter organ seemed only to have been secondarily affected, and the parietes of which had been destroyed from without to within.

In a small number of individuals, the cancer primitively in-

vades the mucous coat, which becomes thick, soft, fungous, and at last ulcerated. In this manner cancer of the womb frequently commences by ulceration of the mucous coat, lining the interior of the vagina, and the neck of the uterus. No tumour in such case precedes the ulceration. At other times, the cancer, primarily developed in the mucous coat, shows itself under the aspect of a polypiform tumour, projecting above the rest of the membrane, sometimes to the extent of some lines only; at other times, of from one to three inches, connected with it by a large base, or by a small peduncle. Many of these tumours exactly resemble certain champignons, the long stalks of which support a large capital with round edges. Their surface is commonly rugous and unequal, frequently bleeding; their tissue soft, fungous, and very vascular. The mucous membrane around them is most commonly healthy. Similar tumours are found in every part of the stomach; we have seen them implanted round the cardia, oppose the free introduction of nourishment into the stomach, and we have observed them around the edges of the pylorus, obliterating more or less completely that opening. When inconsiderable, and occupying the surface of the stomach, they may exist without in any manner disturbing the functions of that organ. We have found them, after death, in individuals whose ready digestion, and the complete absence of pain at the epigastrium, nausea, eructations, &c., did not admit of even a suspicion of the existence of organic disease of the stomach.

Erectile Tissue.—We have sometimes witnessed, loose (*flottant*), at the internal surface of different portions of the intestinal canal, small round or oblong tumours, of a brownish colour, attached to the mucous coat by a thin and narrow pedicle, and having, upon an average, the size of a hazel nut. On cutting and pressing them between the fingers, some black liquid blood is made to issue; and on subsequently washing them, their tissue is observed to be formed of a crowd of filaments, intersecting each other in different directions, and leaving between them interstices of various forms and sizes, where the blood seems to have been effused. The pedicle of these tumours is formed by a prolongation of the mucous coat, which around them is healthy.

These tumours, which present all the characters of the *erectile tissues*, are but rarely met with: and when they do exist, only one or two can be discovered in the whole extent of the canal. Once we have seen the mucous coat of the cæcum present eight or ten crowded together.

In the cases which we have observed, the *erectile tumours* were too small for any symptom to announce their existence. When more considerable, might they not be the occasion of extensive hæmorrhages?

Mélanoses.—Under this name we designate small black tu-

mours which we have several times observed in the great intestine. They are subjacent to the mucous coat, which they raise up; those we have dissected were, upon an average, of the size of a hazel-nut. They were round, of a beautiful deep black, crushed easily under the finger, and were like the matter with which common anatomical injections are made. We have found the transverse colon filled with similar tumours in an individual who for a long time had been subject to an abundant diarrhœa, which alternately appeared and disappeared; the mucous coat was in no wise diseased.

The mucous tunic of the small intestine, and of the cæcum, is sometimes found covered by a truly infinite number of small black points, of scarcely the size of the head of a very small pin, and which may be somewhat justly compared to the hairs of a beard recently shaved. We find them, most commonly, crowded together, so as to form by their assemblage round or oval patches, on which the white mucous coat appears as if penetrated by an infinite number of these small spots; their colour may be made to disappear on slight friction: the mucous coat beneath them presents a small lacuna, with a white edge and base.

These black spots sometimes cover the mucous coat to the extent of several feet. It is in the lower quarter of the small intestine that they are most frequently observed. We have never found them in the stomach, and they are very uncommon in the great intestine below the cæcum. They exist in all possible conditions of the mucous coat. We met with them so often during the summer of 1821, in individuals who had died of different diseases, that we are much inclined to think that no morbid symptom is induced by them. Our friend and colleague, M. Descieux, has also observed them in a very great proportion of the sheep killed for the market, the intestinal canals of which he had occasion to examine, towards the end of the autumn of 1821. But what is a remarkable circumstance, we found them but rarely after the commencement of winter!

If we endeavour now to determine the nature of these black points, we may remark, first of all, that they have a disposition, similar to that which the mucous follicles present, as so well described by Leger nearly two centuries ago. Like these follicles, they are observed grouped around each other, and forming, by their agglomeration, circular, oval, oblong, angular, &c. figures. Like them, they are found more numerous the nearer we proceed in our examination to the cæcum. Is it not allowable to imagine, from the preceding considerations, that these black points are nothing more than the result of a morbid secretion of the follicles?

Serous Cysts.—We have frequently found these cysts developed beneath the mucous coat, both in the small and large intestines. The major part of those which we have met with were of small size. The largest we have had occasion to dissect was of the size of a common walnut. Primitively developed in the laminated tissue, subjacent to the mucous coat, it had extended between the fibres of the muscular coat, and formed a remarkable projection beneath the peritoneal coat.

If we are to believe authors, this species of cysts have, under some circumstances, undergone a prodigious development. Bonet, Dehaen, and Peter Frank, have related cases in which these tumours had been mistaken for ascitic dropsies; the operation of paracentesis was performed: an enormous quantity of serosity issued from the abdomen, and it was not until after death that the true nature of the disease was discovered.

Several authors have likewise spoken of vesicles full of a serous liquid, developed at the free surface of the mucous coat, to which they were adherent. Bonet observed one of these vesicles, seated on the pyloric circle, and projecting to the extent of half a finger's breadth into the cavity of the duodenum. The mucous coat of the stomach, in its whole extent, presented several others of them, some of which were whole, and others lacerated. Bonetus gives them the name of hydatids.

Œdema of the Intestines.—Not only do serous cysts develop themselves at the free or adherent surface of the mucous coat of the intestines, but also the laminated tissue subjacent to that membrane may become the seat of a real serous infiltration. We have several times observed this œdema of the sub-mucous cellular tissue, the existence of which had been denied by Bichat. We have met with it more especially in dropsical subjects, who had laboured under diarrhœa, in aged people, who, after having languished for a considerable period in the hospital, had finally fallen into an adynamic state: and in patients exhausted by chronic organic affections. We observed it particularly well marked in a female who had laboured under encysted dropsy of the ovary.

We have also witnessed a considerable quantity of serosity effused between the laminæ of the cellular tissue subjacent to the mucous coat, lining the internal surface of the gall-bladder.

Adipose Tissue.—We have only once met with a fatty tumour in the substance of the parietes of the digestive tube. It existed towards the middle part of the ileum, and was of the size of a hazel-nut. Developed beneath the mucous coat, which had preserved its natural appearance, it presented a uniformly smooth surface; but when the mucous coat covering it was removed, it presented a clustered appearance (*un aspect comme pelotonné*).

It was perceptibly formed of a numerous assemblage of small oval or spheroidal vesicles, separated by slight furrows, traversed by vessels; each of these vesicles contained fat. A narrow pedicle kept the whole tumour adhering to the laminated tissue.

ARTICLE III. *On the state of the digestive tube in the different fluxes, known under the name of diarrhœa, dysentery, and lientery.*—These affections have been for a long time looked upon as diseases entirely independent of inflammation of the intestines. Many ancient authors have, in truth, spoken of the ulcerations seated at the internal surface of the digestive tube in chronic diarrhœas, but they consider them as an effect of the diarrhœa. Such was the opinion of Boerhaave, and of Van Swieten, his commentator. We have already seen that such also was pretty nearly the idea of Stoll; and it may be likewise found in the writings of Hippocrates. He was not ignorant that in dysentery the intestines are the seat of more or less deep ulcerations, but he regarded them as being occasioned by degenerated bile and phlegm.

Is relaxation of the bowels constantly connected with an inflammatory condition of the mucous coat of the intestines? This is a very important question in a therapeutical point of view. We shall endeavour to answer it by presenting a summary of the numerous cases which we have collected on the subject.

We have several times found, in individuals who had laboured under recent or chronic diarrhœa, the internal surface of the intestinal canal very pale in its whole extent, the mucous coat having preserved its thickness and ordinary consistence. Patients weakened by long organic diseases, hydropics, old people under that state of debility denominated by the ancients cachexia, and who succumbed after having laboured, for a longer or shorter time, under considerable looseness, frequently present that state of the intestinal canal. Their stools are copious, very liquid, purely watery; surpassing by much the quantity of liquids taken in. We have sometimes found, in cases of this kind, a well-marked serous infiltration of the sub-mucous cellular tissue.

Morgagni has transmitted to us the history of several cases of diarrhœa without inflammation of the mucous coat of the intestine. He has seen several individuals labouring under that disease die in a short space of time, exhausted by the excessive abundance of their alvine evacuations. In these atonic diarrhœas, the intestinal parietes frequently become much extenuated; the fleshy coat, especially, experiences a true atrophy, and occasionally seems to be only composed of some pale and small fibres, widely separated from each other. Bonet had already remarked this fact. "In chronic diarrhœa," says he,

"we find the intestines as thin as a cobweb." The intestine, in this state, seems to be unable to fulful its functions; chylification is but imperfectly performed, absorption becomes much less active, and the food is frequently voided as when taken. This is what the ancients designated under the name of lientery.

The mucous coat of the intestines may then, like many other textures, become the seat of a much more abundant secretion than usual, although it presents no trace of inflammation. It is thus that, during convalescences from chronic maladies, the exhalation of serosity into the subcutaneous cellular tissue is frequently augmented. It was not, therefore, without reason that Sauvages designated under the name of *flux*, a particular class of diseases.

Since truly atonic fluxes may exist, it follows that a strengthening and astringent treatment is, in these circumstances, the only proper plan to be pursued. Thus the œdemata, of which we shall presently speak, may be dispersed, either by the employment of topical stimulants, or by the internal administration of tonic medicines.

In other individuals, we find the mucous coat of the intestines equally white in its whole extent; but beneath it numerous tubercles, or other adventitious tissues, exist. They provoke diarrhœa, either by the sympathetic irritation which they determine to the mucous membrane covering them, or by stimulating by their presence the muscular coat, the contractions of which consequently become more rapid and more intense. It is in this manner that the different adventitious tissues, developed in the parenchyma of the lungs, provoke an habitual irritation of the mucous membrane of the bronchiæ; but, most commonly, the diarrhœa in this case does not appear to become permanent and considerable, until the period when the tubercles, having become softened, inflame and ulcerate the mucous coat.

It is, moreover, indubitable, that in a very large majority of cases, the intestines of individuals labouring under diarrhœa, whether complicated or not with dysenteric symptoms, present evident marks of phlegmasia.

This phlegmasia may be seated in the small or in the large intestine.

In the small intestine, it frequently only exists to the extent of some fingers' breadth above the ileo-cæcal valve; at other times a larger portion of the small intestine has laboured under it, where it either appears under the form of a simple injection of the mucous coat, alteration of its texture, red or white softening of its tissue or ulceration.

Numerous cases have apprized us that acute or chronic diarrhœa is the frequent result of isolated inflammation of the small intestine, without the large participating in it in any man-

ner. We insist on this fact, because M. Broussais has laid down, as a general principle, that enteritis is accompanied with constipation, and that diarrhœa only supervenes when enteritis is complicated with inflammation of the colon (*colite*).

Of the three portions of the great intestine, the cæcum is that which, in diarrhœa, most frequently presents one of the three degrees of inflammation; after that the colon; and, lastly, the rectum.

The symptoms, the *ensemble* of which constitutes dysentery, are not connected with any particular state of the intestines. The tenesmus alone announces that inflammation exists in the rectum. As for the bloody and glairy stools, they appear in individuals whose intestines present lesions analogous to those which are observed in other patients whose stools had always been purely watery.

We once found a somewhat considerable number of ulcerations in the ascending colon, in a phthisical patient, who, after having previously laboured under diarrhœa, had not felt it for a long period, and had even become constantly constipated. It may be conceived that this may be the case, when the ulcerations are small, by no means numerous, and when neither the edge nor the base is inflamed. In fact, at such times they can only, like tubercles, produce a flux by the sympathetic irritation of the mucous coat surrounding them, or of the muscular coat.

The different states which the digestive tube may present in diarrhœa being well known, can they be distinguished during life from the symptoms which manifest themselves? This, in many cases, is possible. Thus, if pains of the abdomen are observed, if the skin is burning hot, the pulse frequent, if the dejections are slimy, membraniform, or bloody, we may be satisfied the intestine is the seat of more or less intense inflammation.

We may add, however, that nothing is more common than the absence of every species of pain in cases where numerous ulcerations cover the internal surface of the intestines, whether of the ileum, cæcum, or colon. How frequent, also, is it on the other hand, to see patients complain of violent pains in the abdomen, although the digestive mucous coat is not the least inflamed. Is not this the case, as the success of the treatment confirms, in lead-colic, which is cured by the employment of the most active drastics, in the colics termed nervous, which frequently yield to eminently stimulant medicines, and in those which are owing to stimulation of flatus and of fecal matters, and which are treated with so much advantage by repeated purgatives? Stoll has cited a remarkable case of syphilitic intermittent colic, which yielded to the use of corrosive sublimate.

We have already seen that intestinal tubercles may arise, become developed and softened, without any pain indicating their presence.

The character of the stools is not always itself a certain sign by which we can recognise inflammation. Sanguineous evacuations have been observed to take place *per anum* in individuals whose intestinal mucous coat was found sound after death. These passive hæmorrhages are analogous to those which take place in many dropsical individuals, at the internal surface of the serous membranes of the chest and abdomen; they are similar to the hæmorrhages of which the skin, the cellular tissue, and the synovial membranes, become the seat in scorbutics.

The serous dejections, resembling water, coloured yellow or green, manifest themselves equally in all possible conditions of the digestive tube, in the cases where it is ulcerated, and in those in which its parietes are pale, thin, and œdematous (*infiltrées*).

When even ulcerations exist in the intestines, ought they to be regarded as a constant obstacle to the employment of tonic and astringent substances? They present such a great variety in their nature, that it seems the same method of treatment cannot agree with all.

The white, grey, or brown colour of the base, the nature of the secretion which takes place there, the want of, or the considerable thickening of the laminated tissue which forms it, the appearance and disposition of their edges, the different degrees of consistence, of thickness, and of colour, of the mucous coat which constitutes them, the separation of this membrane to a greater or less extent, its state in the spaces between the ulcerations—are they not so many circumstances which seem to demand a multiplicity of modifications in the treatment? We may thus easily explain how any curative method succeeds very well in one case, and completely fails in another. We have seen, for example, several diarrhœas yield to the decoction of catechu; we have seen others increase, and become aggravated during the administration of this medicine, although in both cases the symptoms were nearly the same, and the patients placed in nearly similar general circumstances; the major part were consumptive individuals. It would frequently be of great importance, could we, in the same portion of the intestine, apply an astringent or tonic substance upon the ulcerations, and cover with emollient applications the spaces which separate them, and reciprocally. In this manner the Surgeon acts in the treatment of several ulcers situated on the surface of the body. He heals them by endeavouring to keep up inflammation to a certain degree, above and below which the disease cannot proceed towards resolution. Is it not again by the employment of topical astringents that many chronic ophthalmiæ are cured? Is it not also by the employment of resinous substances that chronic phlegmasiæ of the mucous membrane of the lungs and urethra

may be very successfully treated? We have very frequently seen M. Lerminier have recourse, with marked advantage, to a slightly stimulant treatment towards the end of acute pneumonia, having a tendency to pass into the chronic state.

Finally; in order to add fresh weight to these considerations, we might invoke the authority of the ancients, who, in diarrhœas and chronic dysenteries, made a frequent and successful use of many astringent substances, given under different forms.

We shall not suffer ourselves, however, to accumulate observations for the purpose of elucidating these important questions, but conclude with the following quotation from Muschenbroek:—

"*Pauca experimenta nos confidentes reddunt, audaces, gloriosos; multa incertos; plurima denique, ac humanam ferè superantia patientiam ad aliquid concludendum nos eminùs præparant.*"*

On the Medicinal Powers of Elaterium. By Dr. KINGLAKE.

(From the London Medical and Physical Journal for June, 1823.)

The medicinal powers of elaterium have been always regarded as being peculiarly and violently active; so much so, indeed, as to have precluded them from free and confident use. There are but few articles in the materia medica that exert a stronger influence on the actions of life than elaterium; and experience has ascertained that this agency may, in various conditions of disease, be turned to a highly salutary account. Substances may possess qualities capable of deeply affecting the actions of animal life, without at all proving beneficial. When this is the case, the agent is destitute of medicinal or remedial powers. Adequate experience can alone determine the real efficacy of reputed medicines; and to estimate correctly, by even this source of intelligence, the closest and most cautious observation

* The following is an extract from the "*Report made to the Section of Medicine of the Royal Academy of Medicine,*" *by MM. Chaussier and Hippolyte Cloquet, on the preceding Mémoire:*—"En somme, Messieurs, nous avons trouvé dans le Mémoire qui nous a été soumis, les preuves d'un grand éloignement pour tout esprit de systême; il est propre á donner de son auteur une très favorable idée, par le soin aussi scrupuleux que méritoire, avec lequel celui-ci a fait ses observations; la forme d'ailleurs répond ici au fond, et nous concluons à ce que le travail dont nous venons de vous rendre compte soit honorablement déposé dans vos archives, jusqu'à ce que l'Académie s'occupera de compléter le nombre de ses membres, le nom de M. Andral, fils, devra être porté sur la liste des candidats.

"Paris, le 30 Juillet, 1822.

"Signé CHAUSSIER.
HIPP. CLOQUET, Rapporteur.

"Certifié conforme par le Secrétaire de l'Academie,
"BECLARD."

is required. The early periods of medical history have recorded the medicinal virtue of elaterium, and it is probable that, if its active properties had not occasionally operated with a violence that induced an apprehension of its being unsafe for general use, it would long since have acquired an established reputation for being almost singularly efficacious in speedily and permanently removing serous effusions, constituting the various forms of dropsical affection.

The Greeks gave to the juice of the wild cucumber (*cucumis sylvestris*,) the name of *elaterion*, whence is derived elaterium, denoting a strong purgative quality. Theophrastus, who flourished three hundred years before the Christian era, regarded it as a medicine of great and various power, affirming that it would retain its active properties two hundred years; and that, when fifty years old, it would, by its evaporable force, extinguish a lighted candle or lamp, when nearly approached to it. Pliny also observes, that a test of the genuineness and purity of elaterium, is when "it causes a lighted candle to sparkle upwards and downwards." The medicinal virtues of elaterium were not unknown to Hippocrates and Galen: they speak of them as being violently purgative. Later observers have investigated the qualities of elaterium, and have ascertained them to possess higher and more efficient cathartic powers than those of any other article of the materia medica. The German Zuingerus, in his Theatrum Botanicum, remarks, "Diese Gurke hat auch eine etzende purgirende Salz bey sich, vermittelat dessen es nicht nur von sich den Leib purgient sondern auch den monatsfluss der Weibern befördent, dieser Saft halt sich sehr viele Jahren, und verlient seine Kraft nieht."

The constituent principles of elaterium possess qualities that specifically affect the peristaltic power of the intestinal canal. They not only excite it to increased action, but seem also vastly to augment the whole of the enteric secretions; so that the alvine discharges resulting from the operation far exceed in quantity those which are produced by any other known purgative. The afflux of fluids derived to the intestines by this excitement, and the consequent effusion into their cavity, largely abstract from the superfluous water of the circulating fluids, and thus room is afforded for absorption from the visceral and cellular cavities in dropsical disease. Such is the strong influence which this medicine exerts on the vital power of the first passages, that doses from a quarter of a grain to one grain, taken night and morning, will induce and sustain a cathartic action, that will remove from the system, through the intestines, from two to four quarts of fluid in the course of twenty-four hours.

This vast excretion creates a deficiency of fluids in the sanguiferous system, and thereby causes the absorbents freely to

receive from the cavities any serous accumulation that may have taken place in them. If this absorbing and evacuating operation be sufficiently carried on, all dropsical distention, and the various hurtful oppressions connected with such plenitude, will be removed, and an opportunity afforded, in the absence of visceral disease, for a permanent re-establishment of the healthful tone and energy of life.

Elaterium does not appear to produce its full effect as an hydragogue until after it has been taken for a week or ten days, when its specific or peculiar influence on the intestines seems to be established, and to proceed uninterruptedly as long as it may be judged right to persist in its use. The stomach is occasionally much nauseated by elaterium; but this early effect of the remedy speedily passes on to the bowels, where its active influence at once relieves the stomachic disturbance, and carries off, by copious discharges from the intestinal canal, large quantities of effused and oppressive fluids. Nor does the sickening effect of the medicine impede its salutary action in promoting the absorption and discharge of serous accumulations. Like digitalis, it is probable that, by temporarily diminishing and retarding the contractile energy of the arterial system, it lessens exhalation, whilst absorption proceeds in an increased proportion. In dropsical disease, it frequently happens, in addition to the general atony prevailing in these cases, that a morbid determination obtains in the exhalent division of the arterial system, which occasions an inordinate supply of fluid in all the interstitial spaces of the body. This occurs without proportionate absorption, and, of course, must speedily deluge both the cellular and visceral cavities, into which it is liable to be diffused. Suspending and diverting this determination by the nauseating influence of medicine like elaterium, exerting its concentrated action on the peristaltic power of the intestines, may efficiently remove both the cause and effect of the redundant exhalation.

It is not evident, when elaterium is operating most powerfully in abstracting from the bowels the aqueous accumulations existing in dropsical disease, that it augments the urinary secretion. Indeed, during its full influence on the intestines, it is hardly possible that its action could be also extended to the kidneys. Its cathartic effect is so direct and intense as almost necessarily to confine its undivided power to that sphere of action. Were it more distributed, its evacuant agency would be proportionately diminished. When cathartic substances strongly excite the peristaltic power of the intestines without producing much evacuation, the excitement is apt to be sympathetically transferred to the kidneys, and to be shown in an augmented secretion of urine. Thus cathartic medicines have been held to be likewise diuretics, when exhibited in suitable quantities.

This notion is, perhaps, more imaginary than true; and, were it admissible, it would suppose a convertible property in all medicines, in denial of the prevailing and more reasonable opinion, that medicinal substances, in the vast diversity of their component parts, have properties peculiarly adapted to produce specific effects on the different states and conditions of excitability obtaining in the various and dissimilar textures of the human body. The natural aptitudes subsisting between the peculiar excitability of different parts of the system and the stimulant properties of certain medicinal substances, must be accurately investigated and known before the desired precision can be obtained in determining the specific powers and uses of such agents.

A medicine so active as elaterium may probably be employed in doses so small as to be incapable of affecting the first passages, as an useful alterative, in chronic diseases, originating as well from vitiated excitement in structures not disorganized, as in morbid enlargement from change of texture and growth of new parts. The whole class of glandular diseases, whether occurring in visceral organs or in glands themselves in their insulated situations, presents the sort of distempered inveteracy that would require all the subtilty and power appertaining to elaterium to overcome it. Dr. Ferriar, in his Medical Reports, has suggested that this medicine might prove an efficacious alterative in obstinate diseases of long standing. Impressed with a similar persuasion, it has been already subjected to trial under my direction;—but, it must be confessed, not sufficiently even to warrant a report of its effects, much less to decide on what it may, under a more extended and varied application of its powers, be capable of accomplishing. The form in which it has been ordered by me, has been a solution of one grain of the extract of elaterium in one ounce of proof spirit; of which thirty drops have been administered as a dose, three times a day. This dose, if the solution of the medicine be accurate, will be equivalent to a sixteenth-part of a grain of the extract in substance; and even this small portion has been known to nauseate. For children, it would be advisable to begin with ten drops, and to advance the number gradually until sickness may be induced, which should be regarded as a test of the maximum dose. By slow and progressive augmentation, it may be ultimately borne to the extent of an eighth, or even a quarter of a grain, without disordering either the stomach or bowels. But the ability to take the increased dose arises rather from a familiarity obtaining between the excitability of the stomach and the medicine, than from an inefficiency of the latter. The influence of elaterium will proceed to a final point of saturation, when it will be no longer borne. To attempt to

urge it beyond that extent, would be to overpower vital action in a manner that would be distressing to the patient's feelings, and may even endanger life itself.

After powerful medicines, such as elaterium, mercury, arsenic, zinc, antimony, prussic acid, opium, digitalis, colchicum, the various narcotics, &c. have been taken long enough to disorder either the stomach or head, they should be discontinued for an interval sufficiently long to allow such saturated or redundant influence to subside, when they may be respectively resumed at the lowest doses, and gradually carried as far as the curative indication may appear to require.

Taunton; March 9th, 1823.

Experiments on the Effects of Apertures made into the Chest.

By David Williams, M.D.

(From the London Medical and Physical Journal for June, 1823.)

The following experiments were instituted from a desire to examine a very important physiological hypothesis, advanced by Dr. Carson. That gentleman has published a pamphlet,* consisting of three essays,—one, on the Elasticity of the Lungs; another, on the Vacuity of the Arteries after Death; and the third, on Lesions of the Lungs. In the second essay, or that on the Vacuity of the Arteries after Death, he relates two methods that he adopted for killing animals, by admitting air through different parts of the parietes of the chest into both its cavities simultaneously, thereby collapsing the lungs. One method was by making an opening, of about an inch in length, between a pair of the ribs on each side of the thorax. The other was by making an opening, fit to admit his two fingers, from within the abdomen, through the muscular part of the diaphragm on each side. Instantaneous death was the result of the latter method in all its trials. In the former, death was not less certain, though a little more tedious: the life of one animal was protracted for twenty minutes. In his third essay, or that on Lesions of the Lungs, Dr. Carson details an experiment performed on three rabbits, as follows:—An incision was made between two of the ribs, on one side, into the cavity of the chest, and the air was freely admitted, (when he concluded that the lung must have been reduced to a state of collapse;) then the wound was allowed to close, and heal. At the distance of five days, a similar opening was made into the cavity of the opposite side; when one out of three rabbits soon expired after the second operation. Dr. Carson inferred from the re-

* *Essays, Physiological and Practical.* By James Carson, M.D. Liverpool, 1823.

sult, that it is possible to collapse one of the lungs, and to retain it in that state *ad libitum*, by keeping open the communication between the cavity of the chest and the external air; and, further, that, upon allowing the opening to close, the lung in a given time will resume its wonted function, thereby rendering it practicable, when conceived necessary, to place the opposite lung under the like discipline. Dr. Carson has very ingeniously proposed the application of his views to the cure of one of the most frequent and fatal of diseases, phthisis pulmonalis; and, in a single instance, he has reduced his hypothesis to practice, by sanctioning the operation on a consumptive patient in this town.

It will be, perhaps, rather difficult to reconcile with the above the results of the following experiments: indeed, had I not been indulged with the presence of medical gentlemen at several of them, I should have felt some scruple in giving them publicity. All the subjects of my experiments were dogs: the four first noticed had their os humeri secured to the rings of 56lb. weights; their hind legs were well extended, and fastened to similar weights; so that they were retained nearly in their natural standing position, which preserved to them, in a great measure, the use of their auxiliary respiratory powers.

1*st Experiment.*—An opening, to the full extent of an inch, was made into the left cavity of the chest, between the sixth and seventh ribs, mid space between the spine and sternum. At each inspiration, the lung was partially inflated, and was distinctly seen beneath the orifice, and at a little distance from it. At each expiration, it evidently contracted, and its lower thin margin was thrust outward through the aperture with great force and a peculiar noise, caused by the protrusion and an exit of a portion of the air. The breathing was distressed when the lung protruded; but, as soon as the lung was allowed to contract, it became more tranquil. The right cavity was in like manner opened, and the same phenomena were observed. When both apertures were kept wide open, the breathing was very laborious and distressing; which did not seem to arise altogether from the presence of air in the cavities, but principally from the violent protrusion of the inferior margins of the lungs; because the instant the openings were permitted to contract, so as to prevent that accident, respiration became more easy. About ten minutes elapsed after the second opening was made, before the lips of the wounds were brought together. The dog, when let loose, walked, was weak, but breathed easy; would taste nothing until the next morning, when he appeared lively, took his food, and regained his strength daily. The ninth day after the operation he was hanged, and the trachea tied, to prevent the lungs collapsing on opening the chest.

Dissection.—No morbid appearance in the cavities of the chest; the wounds were healed internally, but not externally. The lungs did not reach, by two inches, the lowermost part of their cavities; nor did their bulk appear equal to the filling of the remaining part of their cavities.

2*d Experiment.*—Dr. Traill, and Mr. Christian and Mr. Dawson, surgeons, present. The operation was performed in the same manner as the first. The openings were better than an inch in length. Both lungs were wounded in the operation, in consequence of the animal's struggling, his hind legs not being sufficiently extended. The lungs did not protrude; but the wounded part of the one that was most seriously injured by the knife was observed to present itself, at each expiration, opposite the aperture. Will a wounded lung protrude under every circumstance that a sound one will? The above medical gentlemen were convinced that the lungs only partially contracted, and that they were not in a quiescent state; but that respiration more or less oppressed, according as the openings were expanded, continued uninterruptedly during the experiment. A silver catheter, introduced into the chest, was moved about by the alternate contraction and distention of the lung. The dog was detained, with both apertures wide open for the space of five minutes; and then untied, without bringing the edges of the wounds together. He was lively, shook his tail, drew himself upon his belly along the floor; then lay down on one side, and contracted himself, as if to close the openings: whether it was instinct or accident that induced him to choose that position, it certainly had that effect, thereby enabling him to breathe easier. Though his breathing, after he was let loose, did not appear much oppressed, his strength was considerably exhausted. About an hour after, the edges of the wounds were brought together; during the intermediate hour, the external air communicated with the cavities. He refused his food until next day, when he recovered his appetite, and regained his strength apace. The fifth day after the operation, the dog was hanged.

Dissection.—The internal edges of the wounds healed; the left lung had a deep-coloured circular spot, as large as the circumference of a crown piece, surrounding the wounded part, which was quite healed. On making an incision into the discoloured portion, it was found gorged with blood, without any apparent disorganization, and appeared to be in a fair way of regaining its natural state. A similar spot, surrounding the wounded part, was observed on the right lung, but smaller: that wound was also healed. No adhesion or extravasation in either cavity. Absorption must have been rapid, as a considerable effusion of blood into the left cavity had taken place during the operation.

3d Experiment.—In the presence of Drs. Jeffrey, Jardine, Nicholson, and Messrs. Blackburn and Jones. An opening, of an inch and a half in length, was made between the sixth and seventh ribs, on both sides of the thorax of a middled-sized cur. The air had free ingress during inspiration; and at each expiration it rushed out, the lung frequently protruding, when not prevented by the examinations of the above medical gentlemen. The breathing was much oppressed. The animal was kept on the table five minutes after both the openings were made: when let loose, he walked about, apparently but little affected, the air passing in and out of the cavities. At the expiration of ten minutes from the time he was liberated, the apertures were fully distended, and retained so by applying and pressing a finger at the extremity of each of them, which prevented the ribs from approaching each other: in fact, in my opinion, they were fixed. The death of the animal took place in less than two minutes. To what extent the auxiliary respiratory organs were impeded in their action by the two ribs on each side being retained asunder, I cannot say; but, if they were impeded, and I think it is evident that they were, the death of the animal naturally must have been accelerated.

4th Experiment.—In the presence of the above gentlemen. A small opening was made into each cavity of the chest, in the intercostal spaces, of a bull-dog, and a full-sized clyster-pipe introduced into both apertures, which were retained for half an hour in an oblique position, their internal ends pointing towards the upper part of the thorax; during which time the air freely passed inwards and outwards. The animal was occasionally disturbed in his breathing; when he would struggle and contract, so as to force out, as much as possible, the air in the bags of the pleuræ; then he would make a quick and full inspiration, by which he was considerably relieved. After regaining his liberty, he seemed but little injured by the operation.

5th Experiment.—An opening, five inches in length, was made between the sternum and symphysis pubis into the cavity of the abdomen. The diaphragm appeared tense, and the action of its fibres were visible, but confined, from the very great pressure required to prevent the protrusion of the intestines, &c. The violent thrusting outward of the contents of the abdomen was principally, if not altogether, occasioned by the action of the diaphragm; for the force of the protrusion diminished as soon as its action on one side was obstructed, and ceased when it took place on both sides. With a little difficulty, an opening, about an inch in length, was made into the left cavity of the chest, through the muscular part of the diaphragm, three inches below its attachment to the ribs. When the air rushed in, the diaphragm on that side became relaxed, and its action

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Dissection.—The internal edges of the wounds healed; the left lung had a deep-coloured circular spot, as large as the circumference of a crown piece, surrounding the wounded part, which was quite healed. On making an incision into the discoloured portion, it was found gorged with blood, without any apparent disorganization, and appeared to be in a fair way of regaining its natural state. A similar spot, surrounding the wounded part, was observed on the right lung, but smaller: that wound was also healed. No adhesion or extravasation in either cavity. Absorption must have been rapid, as a considerable effusion of blood into the left cavity had taken place during the operation.

3d Experiment.—In the presence of Drs. Jeffrey, Jardine, Nicholson, and Messrs. Blackburn and Jones. An opening, of an inch and a half in length, was made between the sixth and seventh ribs, on both sides of the thorax of a middled-sized cur. The air had free ingress during inspiration; and at each expiration it rushed out, the lung frequently protruding, when not prevented by the examinations of the above medical gentlemen. The breathing was much oppressed. The animal was kept on the table five minutes after both the openings were made: when let loose, he walked about, apparently but little affected, the air passing in and out of the cavities. At the expiration of ten minutes from the time he was liberated, the apertures were fully distended, and retained so by applying and pressing a finger at the extremity of each of them, which prevented the ribs from approaching each other: in fact, in my opinion, they were fixed. The death of the animal took place in less than two minutes. To what extent the auxiliary respiratory organs were impeded in their action by the two ribs on each side being retained asunder, I cannot say; but, if they were impeded, and I think it is evident that they were, the death of the animal naturally must have been accelerated.

4th Experiment.—In the presence of the above gentlemen. A small opening was made into each cavity of the chest, in the intercostal spaces, of a bull-dog, and a full-sized clyster-pipe introduced into both apertures, which were retained for half an hour in an oblique position, their internal ends pointing towards the upper part of the thorax; during which time the air freely passed inwards and outwards. The animal was occasionally disturbed in his breathing; when he would struggle and contract, so as to force out, as much as possible, the air in the bags of the pleuræ; then he would make a quick and full inspiration, by which he was considerably relieved. After regaining his liberty, he seemed but little injured by the operation.

5th Experiment.—An opening, five inches in length, was made between the sternum and symphysis pubis into the cavity of the abdomen. The diaphragm appeared tense, and the action of its fibres were visible, but confined, from the very great pressure required to prevent the protrusion of the intestines, &c. The violent thrusting outward of the contents of the abdomen was principally, if not altogether, occasioned by the action of the diaphragm; for the force of the protrusion diminished as soon as its action on one side was obstructed, and ceased when it took place on both sides. With a little difficulty, an opening, about an inch in length, was made into the left cavity of the chest, through the muscular part of the diaphragm, three inches below its attachment to the ribs. When the air rushed in, the diaphragm on that side became relaxed, and its action

not only obstructed, but its irritability to all appearance suspended; a portion of the diaphragm jutted out towards the abdomen, and formed a pouch, with the aperture in its centre. A similar opening was made into the right cavity of the chest, followed by the same effects. An ivory tube, three-tenths of an inch in diameter, was repeatedly introduced into each aperture. The diaphragm seemed to be altogether guided by the action of the contiguous parts, and by the pressure and passage of the air, modified by respiration: it was drawn towards the chest, and expanded by the dilatation of the thorax; but its expansion was not sufficient to obliterate the pouches before noticed, which was a strong proof, together with the quiescent state, compared with the previous violent thrusting outward of the contents of the abdomen, of its paralysed condition. Is it not likely that, in many wounds penetrating into the cavity of the abdomen, unaccompanied with thrusting outwards of its contents, that the diaphragm is wounded? At each expiration, it was pushed towards the abdomen, by the pressure and passage of the air from within the cavities of the chest, and the pouches enlarged. The breathing was oppressed, but not so distressing as in the three first experiments, when the apertures were wide open. The external wound was brought together by suture. When the dog was removed from the table, he walked, but tottered a little; he breathed easy; and three hours after lapped some milk, which was rather surprising, as the two first operated upon would accept of nothing until the following morning. He recovered his strength and liveliness amazingly fast. On the third day after the operation he was hanged, together with another dog not operated upon, for the purpose of comparing the appearances of their respective lungs: each had his trachea secured immediately on being cut down, before the suspending cord was slackened, to prevent the collapse of the lungs on opening the cavity of the chest.

Dissection.—In the presence of Dr. Traill, to whom I am greatly indebted for many suggestions in conducting these experiments. No morbid appearance in the abdomen, with the exception of a few adhesions between the liver and peritoneum. The apertures in the diaphragm were closed by a tender film, which very readily gave way to the probe. On opening the chest, the heart was observed once to contract; and the pericardium was perfectly transparent, as remarked by Professor Richerand. We could perceive very distinctly the ramifications of the coronary vessels. The diaphragm was in its natural position; no adhesions. The lungs, on first exposing of them, were perfectly smooth and glossy; in a little time they were slightly corrugated, by the effect of the cold in condensing the enclosed air: the examination was conducted in the open air.

Not the slightest difference could be perceived, either in the expansion or general appearance of the lungs of the two dogs. The lungs did not extend, by two inches, to the inferior part of their respective cavities; and their bulk appeared insufficient to fill the remaining part of the bags of the pleuræ.—Pray, what proof is there that the lungs fill the bags of the pleuræ? I must confess that I am quite sceptical upon that point; and, on the contrary, believe that in a healthy state they never completely fill them. To prove that the measure which we had recourse to was effectual in preventing the air escaping out of the lungs when the chest was opened, at the conclusion, we divided the windpipe of each below the knots, when they instantaneously collapsed.

6th Experiment.—The description supposes the animal to be standing upright on his hind legs. The right cavity of the chest was transfixed with a sharp-pointed penknife, by thrusting it transversely, with a slight degree of obliquity downwards, through the intercostal space, immediately above the upper edge of the eleventh rib, mid space between its head and anterior extremity. The animal was afterwards put to death.

Dissection.—The instrument had pierced the diaphragm, and had slightly wounded the liver; the lung uninjured; the knife had passed as near as possible through the centre of the cavity at that part, and but little short of two inches above its inferior termination. Had the lung extended so low down it must have been wounded, the knife being sharp-pointed, and pushed in with force.

7th Experiment.—To remove every doubt with respect to the state of the lung when deprived entirely of the influence of the auxiliary respiratory powers, the following experiment was made in the open air: The cartilages of all the true ribs were divided, with the exception of the superior one, close to their juncture with the osseous structure, and the left cavity of the chest laid open its whole length; the diaphragm was punctured; the ribs, and their cartilaginous ends attached to the sternum, were separated and retained asunder, so as to expose and to deprive the lung of every assistance from the auxiliary respiratory organs. The lung rested upon the ribs and side of the vertebræ. On exposure, it shrunk considerably, but did not collapse. Its motion (for it was not at rest,) might be compared to that of a leech, when it draws up and again recedes its body without making progression; indeed, with both ends fixed: the motion was not that of pulsation, neither was it synchronous with the action of the heart; but it was a slow, undulating movement. On closing the gash, and keeping it so for four or five inspirations, then opening it quickly, the lung was found to have increased in bulk; on exposure, it again diminished. To

close the scene, the knife was plunged into the heart, with a determination never to perform another experiment on a living animal; to which I was induced by my anxiety to solve an important practical problem.

I believe no one has ever appreciated the powers of the lungs and their auxiliaries in respiration during life, in resisting and diminishing the pressure of the atmosphere, when admitted into the cavities of the thorax through apertures in their parietes. That they do possess a considerable power, is beyond a doubt. The oppression of the breathing, and the expansion of the lungs, are in an inverse ratio to one another, and can be regulated by adjusting the dimensions of the openings into the cavities of the chest. As the apertures increase in their size, the power of expansion of the lungs is diminished, while the oppression of the breathing is augmented, until at last life is extinguished. What quantity of air is sufficient to produce death, as long as all the respiratory organs are not restrained, I have not ascertained. The doctrine of one lung collapsing, while the function of the opposite one is unimpaired, on exposure of its external surface to the atmosphere, taught from time immemorial in the schools, I must now consider as erroneous, and feel somewhat surprised that a notion so groundless should have existed for so many ages.

From the foregoing experiments it appears—

1st. That a lung will not collapse from exposure to the atmosphere, as long as respiration is carried on by the opposite one.

2d. That a lung possesses for a time, independently of the influence of the diaphragm and intercostal muscles, if respiration is carried on by the opposite one, a peculiar motive power; the source of which I do not pretend to explain.

3d. That a sound lung soon regains its full power of expansion when the pressure of the exterior air is removed.

4th. That air, freely and uninterruptedly admitted into both the cavities of the chest simultaneously, through tubes of a certain calibre, will not collapse the lungs, if the auxiliary respiratory organs are unrestrained.

5th. That air admitted into both the cavities of the chest (of a middle-sized dog) simultaneously, through apertures of an inch and better in length, in the intercostal spaces, will not collapse the lungs, provided the animal is allowed, unconfined, the use of his respiratory organs.

6th. That a sound lung never fills the bag of the pleura, at least during ordinary respiration.

If the last physiological inference is correct, it is highly interesting in a pathological point of view. It enables us to explain how hydrops thoracis, or that species of it, hydrops pleuræ, may exist to a certain extent, without being attended

with any symptoms indicating the presence of the disease, as related by numerous medical authors. We can also more satisfactorily account how the lung so frequently escapes being wounded, when weapons penetrate the cavity of the thorax; and how the extravasation which follows, if not considerable, produces but little derangement. It may also have a practical utility; for it informs the surgeon that the lung descends to a certain point only, so that he need not be afraid of wounding it, should an operation be required below that position.

N. B.—Dr. Carson retained open the apertures into the chests of the animals he operated on with his fingers, whereas mine were kept open in the manner described; which accounts for the different results of our experiments. Dr. C., in his essays, does not allude to this circumstance, but he has mentioned it since my investigations. When air is admitted into the cavities of the chest, the animal requires the aid of all his respiratory organs to carry on respiration.

Description of the Yellow Fever, as observed during its prevalence in this City (addressed to the Medical and Chirurgical Society of Cadiz, who requested the Memoirs in reply to the Question as to its Nature, Importation, and Contagion). By Don Juan Antonia Ferrari, Physician in Xeres de la Frontera. 2d July, 1822.

(From the Edinburgh Medical and Surgical Journal, for July, 1823.)

It has been the general belief of almost all the profession, that the yellow fever is a fever of the bilious character, of more or less intensity and acuteness, in proportion to its exciting cause. The variety of the forms and aspects under which it presents itself, has, however, in some measure, discountenanced and altered the idea which medical men had entertained of it, but this particular difference has not been able to change its character; and thus it has been commonly classed as a malignant typhus, or malignant synochus, compounded of synochal and typhous fever.

The symptoms of inflammation, relaxation and debility, which are peculiar to it, have induced some of those who have written on the subject to admit three species distinct from each other, and to employ different plans of cure, the enumeration of which would here be out of place. The majority of practitioners have directed their attention to correct the phlogistic appearances with which it commences, the relaxation which follows, and the debility with which it concludes.

All those who espouse this system, place it in their nosological tables among the *Essential* Fevers. But the difficulties which this view of the subject would involve, taking into view the different anomalies under which it appears, are too great to allow us to consider it essential, as is supposed; for, in that case, it ought to be placed among the primitive fevers, whose fundamental character, according to the partisans of this system, does not admit of the irregularities which are so common in this fever.

Those who think the meaning of the word *Fever* vague and unmeaning, and likely to lead to therapeutical errors, or those who deny the existence of essential fevers, and endeavour to prove that all fevers are secondary, or sympathetic effects of local over-irritation, place the yellow fever among the acute *Phlegmasiæ*, and characterize it as an inflammation more or less violent, of the mucous membrane of the stomach and intestines, including the biliary apparatus, and produced by a putrid miasma of a particular kind.

The symptoms of inflammation, which, from the first, and particularly in the more acute fevers, are observed in the gastric and hepatic system, the progress of the disease, its duration, and the results of those affections which anatomical dissections constantly show, render this last opinion so probable,* that, since the facts which I observed in the epidemic of the preceding year 1821, it appears to me completely demonstrated.

It is equally certain, that the origin of the malignant miasma which produces it, depends on the concurrence or union of certain local causes, animated and put in action by the state of the atmosphere, the temperature of which excites them, particularly in warm countries, or warm situations, such as low, moist, and marshy places; in those where there is any assemblage of animal or vegetable putrid matter, excited by a degree of heat more or less excessive; and those in which the inhabitants breathe an impure air, corrupted by the emanations it receives from the putrescence of stagnant waters, particularly when the heat amounts to, or exceeds 95° Fahrenheit.

This doctrine, then, being admitted, it follows,

1*st*, That atmospheric heat is a necessary condition only in

* Being determined to follow this plan, I followed, with thirty-six patients who fell under my care in that year, a mode of treatment strictly antiphlogistic. The result was, that only two died. The first, after overcoming the fever, committed some excesses on the fourth day of convalescence, and died on the seventh of his second attack. The second, in consequence of a swelling behind the ear, which did not rise properly, died on the 14th—so that, even supposing these to have fallen victims to the fever, the result would still be, that, under this mode of treatment, the mortality would amount to little more than five in the hundred, while, according to the other, it amounted to fifty-five in the same year.

the production of the yellow fever, but not its producing cause, since it is perfectly certain, that, in many warm countries, in which the abovementioned causes of infection do not concur, its ravages have not been felt, nor the disease known. Thus, in Cadiz, in the years 1790, 1800, and 1803—in the first of these years, the thermometer of Fahrenheit rose, on the 21st day of July, to 90; in the second year, on the 20th August, to 87; and, in the third year, on the 7th July, to 89.* If the heat, therefore, in the first and third years, was greater than in the second, how did the yellow fever appear in that year only, and not in the two others?

2*dly*, It follows, that in all those places which do not possess this union of localities, the disease will never spontaneously appear, even though there may be other sources of putrefaction —such as large assemblages of men in situations badly ventilated—animal substances in a state of putrefaction, &c., because the results of these sources of infection not being of the kind which produce this fever, they will occasion others, such as the hospital, army, and prison fevers, which have never yet been confounded with the character of the yellow fever, although they may bear a certain affinity to it, and may exhibit some of its symptoms; just as the want of any one of its symptoms could not be held to vary its essential character.

3*dly*, When the existence of this disease is ascertained in places which are free from those local causes necessary for its production, it follows of necessity, that it must have been imported. Let us take this city as an example. Xeres is situated at an elevation† of about 60 feet above the level of the sea. It experienced the yellow fever in the years 1800, 1804, 1819, 1820, and 1821. There are no morasses, marshes, or other source of insalubrity within its boundaries. Whence then did it proceed in the years abovementioned? If it is proved, that heat alone, however excessive, cannot produce it, and if it is also free from those local causes from whence the particular miasma which is its origin, emanates, and that no other source of infection can produce it, as already said,‡ from whence did it proceed? It is a certain fact, that in all these years, it existed before its appearance in this city, in Cadiz, Malaga, San Fernando, and Puerto Santa Maria. Can any one then doubt of its importation? And if imported, is it, or is it not contagious?

* Dr. Arejula, Treatise on the Yellow Fever, p. 137.

† As it is not easy to perform the geometrical operations necessary for calculating with exactness the height of the city above the level of the sea, the statement given is only an inference from various considerations.

‡ No one can be so ignorant of the influence of the abovementioned causes in Estremadura, and of the nature of their results, as to confound them with the fever in question.

In order to decide this question, it will be necessary, according to the anticontagionists, to prove, in the first place, the arrival of some infected person in some particular quarter of the town. And this is precisely what I shall endeavour to demonstrate from the facts which took place in this city, during the five epidemics of the yellow fever, which it has experienced since the year 1800, and which have fallen under my observation.

In all these the mode of attack has been the same. The disease had appeared first in some of those towns, from which the infected person who introduced the contagion into ours* had removed; and it has uniformly happened, that the fever began in that quarter only where he had lodged; and as that varied with the change of residence on the part of the diseased person, it has happened, that the fever has not appeared in the same part of the town in the five years above referred to. It always attacked particular persons; and the number of infected persons at its commencement, was never observed to be great at one time. At the time of its appearance, or before its progress had extended, there were no sick beyond the quarter in which it was first seen. Confining itself to that for some days, its progress slowly increased, following the direction of the street in which it first appeared, and of the houses adjoining the first infected, without passing to the opposite. Its progress was not interrupted by any obstacle opposed to it, or by any other means which might transmit it in another direction. When it had spread through the city, its propagation increased in proportion to the greater number of communications which the increase of sick occasioned; and during all these periods, it was uniformly observed, that the disease began with units, proceeded by tens, and concluded by hundreds.

This order of progression, so uniform in all the abovementioned epidemics, is a fact so well established in this city, on every occasion in which it has experienced this fever, that it not only demonstrates the truth which I proposed to prove, but it may be extended to all those towns, which have undergone a like visitation, and are placed in similar circumstances: for, supposing that only a determinate source, actuated by a certain degree of heat, can produce the particular miasma which occasions the fever, and that the concurring causes necessary for its production are not to be found in them; if they have it at all, it must be by acquisition.

This induction, it appears to me, destroys the theory of the anticontagionists, in as far as they pretend that the yellow fever,

* Among the papers collected by the Municipal Board of Health of this city, which are preserved in its library, will be found the names of the individuals who communicated it, and an account of its progress.

and the diseases which resemble it, are the result of infection, and not of contagion; because, although it is true that the disease can take its rise at first from a centre of putrefaction, *and from nothing else*, yet in those places where no such centre exists, and where the disease is nevertheless found, to what explanation shall we have recourse? I think the affinity between infection and contagion so close, that it seems to me a miserable subterfuge to have recourse to the first, in order to elude the second.

Nor is it less to multiply, with such fertility, the sources of infection in every quarter in which the fever appears, in order to get rid of its importation and contagion; for, putting out of view, that all are not equally capable of producing the particular miasma which occasions it, which is necessary in this disease as in small-pox, and conceding this power to these supposed sources of infection, why should this power be admitted only in those where the yellow fever appears? and why should the disease not be observed in other places which possess the same sources of infection?*

To deny the existence of contagion, because the mode and medium of communication are unknown, because it is not visible, or because doubts may be entertained whether it be capable of transmission, is certainly a weak argument. The theory of gases, and of the electric and galvanic phenomena, would be placed in the same situation, if the regularity of their results, and their unvariable laws, had not demonstrated what theory could never have inferred from reasoning.

And what else do those facts establish, which have been referred to, and observed in this city, during all the epidemics it has experienced? It would be denying the force of evidence itself, and disbelieving that two and two make four, to doubt, after what has been detailed, that the yellow fever in this city has been imported, and is contagious.

That it proceeds from a poisonous miasma of a particular kind, and that it depends on certain and determinate causes, and no other, is a natural consequence, in all the productions of nature; for if every agent could produce the same effects, these, besides being exceedingly varied and irregular, would be the productions of casualty and chance, rather than of that order and regularity which nature exhibits in all her works. It is generally admitted that the small-pox depends on the contagion of a particular person—why not the yellow fever?

When we consider that its appearance has always been on the sea-coast towns connected with America, and the adjoining

* The stagnant waters in the Armaryales of Carthagena produced many fevers, and occasioned many disorders, but not the fever in question.

towns which have a communication with these, and not in those which have no such communication, nor in those towards the centre of the Peninsula, nor in any other, save coast towns, although the latter may be less exposed to heat than the former; if it has been observed, that its prevalence in this city only took place at the period when its importation could be traced; that during the time when the intercourse was less, and the navigation less common, the disease was also less frequent; and if, in this quarter, the patient suffers the disease only once, as in the case of the small-pox, can we doubt of its importation and contagion?

Lastly, To deny it, because many persons who have exposed themselves to the risk of infection, have not been attacked, is an argument equally applicable to the case of all contagious diseases: and if it proves nothing against them, it can be of no stronger weight against this. To recur to the person first attacked by the disease, in order to refute its power of communication, and to argue from this, that the disease may spontaneously produce itself in others, as well as in that person, would prove nothing, unless we could demonstratively point out the manner in which the disease made its appearance in the first patient who is pitched upon, as affording a conclusive argument, and unless we could prove also that the same causes which now produce the disease, did not then exist. Things which are not infinite, or rather which do not proceed from eternity, must have a beginning; and that which is assigned to this disease, may equally be assigned to all, without varying in any degree their essential character.

The opinion which considers this disease as contagious when increased and extended, though not in its origin, asserting that it may arise from exhalations, which may continue propagating and extending themselves by contagion, does not appear to me very probable; for although it is certain, that the increase of sick, their union and extension, may augment its force and activity, I do not believe that this increased progress can vary its essence, as the mildest small-pox is as contagious as the most dangerous of the confluent class.

The importation and contagious nature of the yellow fever being admitted, there remain to be noticed its reproduction, and the means of avoiding it.

The reproduction of contagious disorders, although possible, is not frequent, when the contagious poison is not indigenous. Even where it is so, although its production is not difficult, it is not very easy; and the very existence of mankind is a sufficient evidence of this truth.

That of the fever in question, supposing it to be the product of another very distant country, transplanted into this, so differ-

ent in its locality and temperature, although it may at first retain virulence enough to produce the ravages which we have unfortunately witnessed in the former epidemics, when it has existed among us for some time, becomes weakened, and loses its power, in consequence of its not being in its native soil, and of the non-existence in this country of those causes which promote and preserve its fecundity: So that, in proportion as it is removed from all exciting causes, its force declines; and even when the infection is communicated, it is not severe; and this is the reason, as I think, that this fever does not spread nor communicate in the country.

The vegetable productions of that region from whence the disease emanates, though they are capable of being produced in this by the force of art, lose almost entirely their natural character. The American pine-apple, for instance, when transplanted to this city, reared by the strength of manure and continual stoves, to imitate the temperature of its native country, and shielded from the influence of the atmosphere by glasses, scarcely even preserves its figure, without any of its fragrance, flavour, or sweetness, and ripens late or not at all. Even within the Peninsula, we see that the garden herbs and fruits, when transplanted to another province, either degenerate rapidly from their original quality and delicacy, or cannot be produced at all. Thus the fruits of Valencia do not thrive in Andalusia; and the potatoes of Malaga will not grow out of that province. These degenerations, so certain and so well known, convince me, that though the poison of the yellow fever may reproduce itself, it requires an assemblage of exciting circumstances so complicated and difficult, that their occurrence must be exceedingly rare.

To insulate the contagion, and to avoid it, are the only modes of escaping it; and although those which the juntas of public health and the magistrates adopted in preference to many others, have not produced the favourable results which were anticipated from them; at the same time, it is necessary to state, that, in order to ensure the success even of the most powerful means, they must be put in action from the first, before the disease has made any progress; for when once it has spread, it is impossible to restrain it.

In the year 1813, while the fever existed in Cadiz, five diseased persons from thence came successively, and on different days, to this city. The vigilance of the internal police, which had been established, denounced them to the Committee of Health the instant of their arrival, who placed them under a seclusion so absolute, that, though they wanted for no necessary assistance, the contagion was insulated, and communicated

to none; so that when they all died, the disease died with them, while the town continued to enjoy perfect health that year.

While Cadiz and Bahia were infected with the yellow fever in the year 1819, among the many infected embarkations which accompanied the squadron destined for the South Sea, convoying the large expedition, the ship Fernando VII. commanded by a friend of mine, Don Francisco Grandellana, with a crew of 700 men, the majority of whom had not experienced the disease, escaped the contagion by means of certain regulations which this deserving officer caused to be observed, strictly prohibiting all communication with every infected quarter, until the close of the epidemic in the month of December.

The ship Guerrero adopted, three days after, the same precautions as the Fernando VII. with the same success. Not so the ships Espana, Alexandro, and Numancia, whose crews suffered great loss from neglecting to prohibit communication with infected places, as the others had done.

It has likewise been observed that those families who have shut themselves up in their houses on the first announcement of the fever, scrupulously avoiding all communication, even though situated in the most infected quarters of the city, and surrounded by diseased families, have escaped any attack of fever, and enjoyed excellent health.*

So, likewise, those who remove before to the country, even though they may entertain some infected person, do not experience the disease,† unless they return before the fever is extinct in the town, in which case they will infallibly fall victims to it.

The result of the above is—

1*st*, That the yellow fever is a *phlegmasia* of the gastric and hepatic system, and not an essential fever.

2*d*, That its cause is a poisonous miasma of a particular kind.

3*d*, That this contagious poison is the effect of a union of certain causes, and no other, excited by a certain degree of heat.

4*th*, That this last is only a necessary condition, but not the exciting cause.

* The family of Don Pedro Cossero, Professor of Medicine in this city, who shut themselves up the year before in their house, in a quarter where there were many infected houses, and especially the two adjoining on each side, were not attacked by the fever, and escaped the contagion.

† In the year 1819, Don Antonio Carrero, a merchant of this city, and his family, who had not suffered the fever, flying from the town, removed to a country seat to avoid it, and were not attacked, although Don Thomas Carrero, already infected, went to visit them, and introduced the disease into the house. He himself died there, without infecting any other person.

5th, That as, in this city, there does not exist, nor has ever existed, that union of circumstances necessary for its production, it is not spontaneous, but has been imported, as often as it has been experienced.

6th, That in considering the mode of attack, communication, and propagation, in this city, we are necessarily led to consider it contagious.

7th, That although it is certain that contagion, and not heat alone, may reproduce the yellow fever, this reproduction is neither so frequent nor so easy as is supposed.

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*Destruction of a great Part of the Spinal Marrow, with Contraction of the Arms, and perfect Motion of the Inferior Members.** A remarkable Case communicated by M. RULLIER, D. M. &c.

(From the London Medical Repository, for July, 1823.)

M. L——, the subject of this case, was aged forty-four years. His size was small, his body thin, and his temperament eminently nervous. His faculties were early developed, and his mind cultivated at an early period of life. Being but young when left to his own discretion, he became addicted to those irregularities which result from an indulgence of the passions. At the age of thirty-four he first experienced pain when moving his arm, attended with pain and uneasiness at the top of the vertebral column. This indisposition, the first serious ailment which he had felt, became suddenly aggravated after several remissions; and in January, 1815, he entirely lost the use of it. After this the dorsal part of the spine became curved, and his shoulders, especially the right, became elevated.

M. L. consulted some of the most distinguished physicians in Paris, who employed cauteries, moxas, and vesicatories, with little advantage. On the *fifth of October*, 1822, M. Rullier was called to attend him. He was then feeble and wasted. The size of his head formed a striking contrast with his small and emaciated body. His neck and extremities were long and thin. The vertebral column was sensibly curved. With the exception of the superior extremities, all the parts of the body enjoyed their voluntary motions. The patient walked about, and even shortly before his death could take several turns on the outer boulevards without fatigue. Borne up by his nervous activity, he assured M. R. that he felt strong.

* M. Magendie justly remarks, that this is one of the most remarkable facts, which pathological anatomy has furnished. It shows how much we have yet to learn respecting the functions of the nervous system.

The arms of this patient were contracted in a permanent manner, sometimes painful, and generally aching. The forearms were in a state of forced pronation, and the fingers in that of flexion. During sleep, the fingers were contracted so forcibly as to mark the skin in the palm of the hand. Notwithstanding the affection of the arms, M. L. could still sign his name in his official capacity, by a movement of the whole arm. The contraction of his arms appeared to be chiefly owing to the pectoral muscles, and the contracted parts preserved their sensibility. The hands were perfectly sensible to every alteration of temperature and to the slightest touch; and pain was excited in the arms by forcible impressions by external objects.

M. L. possessed his intellectual and moral faculties unimpaired. His sleep, however, was disturbed and broken, by difficulty of respiration and palpitation, occasioned by painful stitches darting through his chest. The thorax appeared to preserve only a part of its motions; cough was frequent and difficult, and the expectoration abundant and like cream. Hectic fever, with increase of the frequency and strength of the pulse, supervened, and was accompanied with an aggravation of the symptoms more immediately referrible to the chest and lungs; the remissions of the fever were, however, marked, and attended with comparative ease. The bowels were obstinately constipated. Violent pains were felt in the lumbar region and in the dorsal curvature, and the breathing became more oppressed with the accession of the hectic paroxysm.

Erections continued, as they had been during his illness, and, indeed, through life, frequent, and it was only shortly before his dissolution that the patient had ceased to indulge in the reproductive act; the desire of which, with the requisite energy of the parts, continued almost until his death.

The treatment which was employed before the attendance of M. Rullier had checked a gastro-intestinal irritation which had affected the patient. M. R. found him in a state of pulmonary consumption, supervening to the affection of the bowels, which he could not retard. And on the 31st of October, fifteen days after M. R. first saw him, he sunk under his complicated disease.

Dissection.—The body, opened thirty-six hours after death by MM. Piedagnel and Leconteux, in the presence of M. Magendie, who was kind enough to assist me at this operation, was not as yet visibly altered, although it had remained in a warm place. Its emaciation evinced complete marasmus. The breast and superior members were on this account particularly remarkable. These last were, if I may use such an expression, glued to the body, and were contracted, as was the case before death. The legs and the feet were slightly œdematous.

The vertebral column, the particular object of our examination, offered in the upper half of the dorsal region a slight salient curvature behind and to the right, and which raised the corresponding shoulder. The rest of the back was well formed; the breast, sufficiently straight, appeared to be still more so, in consequence of the arms and the shoulders being raised and brought forward.

The adipose cellular tissue had entirely disappeared. All the muscles were lank and thin: those in the lumbar region were softened and of a deep red colour. The psoas muscles presented the same colour, and were as if in a state of solution. They were not entirely suppurated nor inflamed, and we considered to what point this alteration explained the severe pains which the patient had suffered in the lumbar region, and principally to the right.

The brain was firm, very sound, and contained a remarkable quantity of serum in the four ventricles, and this serum appeared to have the power of following the erection of the body into the cavity of the spinal arachnoid; at least, we could not establish the existence of a cul-de-sac formed by this membrane, and which closes on this side the fourth ventricle. Neither did the valvule of Vieussens exist. Nothing that regarded the cerebellum appeared to be worthy of remark, nor any thing that could be united with the prodigious generative activity that had distinguished the patient.

The arachnoid of the ventricles was clearly distinguished: it presented a simple increase of thickness, which did not alter its transparency.

The fibrous canal of the spine was laid bare throughout its whole extent, by removing the spinous apophyses and plates of the vertebræ; the marrow suffered no sort of compression in its canal; only it contorted itself as the spine did in the dorsal region. The cavity of the arachnoid contained a remarkable quantity of serum; beneath part of this membrane, united to the marrow, we found the membrane belonging to the latter covered with a great number of red vessels, arterial and venous, strongly injected with blood.

The vertebral marrow, examined with care, in its place and by its posterior face, appeared to us in its natural state, from its origin as far as the fourth pair of cervical nerves. The two inferior thirds of its dorsal part were equally sound; but between these two parts, viz. for about six or seven inches in length comprised between the two inferior thirds of the cervical region and the upper third of the dorsal region inclusively, and corresponding to the eighth or ninth pair of nerves, this part displayed the most remarkable alteration: it was soft to such a degree of fluidity that the canal formed by the dura mater ap-

peared to be full of a real liquid, which followed the direction of its gravity up or down according to the position of the body; but this liquid, which thus doubly inflated the covering of the marrow, stopped precisely at those parts of this organ which remained in their natural state. A small opening being made in the dura mater immediately let a quantity of this fluid run off: when the membrane had been cut through, the spinal marrow was seen covered with its proper membrane; it was of a reddish grey, and extremely soft; it presented a sensible fluctuation,* and the opening of its membrane allowed a liquid mixed with small flakes of the medullary matter to run out. We afterwards made a large opening, and a longitudinal incision, in this part of the marrow, which presented to our view an elongated cavity, filled with a sort of greyish light red fluid, in which a great number of red and extremely thin capillary vessels were dispersed.† The medullary bands connected with the corresponding roots of the spinal nerves could scarcely be distinguished on the anterior part of this altered portion. On the left side, the interrupted band was no longer marked, for about an inch and a half, except by lenticular pieces of the medullary matter placed one after another in the line of its direction: this disposition appeared to us to have entirely resulted from the running out of the matter which had existed in this place, in consequence of a small accidental perforation made in the middle part of the opening, or of the treatment the marrow had received. The marrow, detached and taken from its canal, could be examined by its anterior region. Here the alteration of which we have spoken was much less sensible; the difference was not superficial, was not to be remarked from the exterior, and the discharge of the matter from the incision that had been made had diminished the volume and removed the appearance of fluctuation; the medullary bands corresponding to the reticulation of the origin of the anterior branches of the spinal nerves were apparent, and offered no interruption throughout their whole length, with the exception of the left, which, as we have already said, was altered; they were traced throughout the whole extent of the marrow as far as the medullary tissue, whence they have their origin.

An attentive dissection showed us that the disposition and

* The appearance of this part of the marrow was such, that each of the assistants exclaimed that there was a dropsy in the marrow itself; in effect, the natural colour of this part had disappeared, and was replaced by an almost colourless liquid, in which some flakes of the medullary matter were floating. —M.

† For the first time, I have seen as distinctly as possible the internal cellular tissue of the marrow; it was swelled with the liquid of which my companion M. Rullier speaks, but its plates and its cellules were no longer evident: they are still more so on the piece which I preserved in spirits of wine.—M.

structure of the origin of the marrow and its superior part, as far as the fourth pair of cerebral nerves, presented nothing particular. Behind, the inferior part of the fourth ventricle and the posterior pyramids—before, the pyramidal and olivarian eminences, displayed their known configuration. On examining carefully the origin of the first spinal nerve, we convinced ourselves that the most inferior reticulations of its origin evidently corresponded to that portion of the marrow which was destroyed.

The structure of all the part situated above the fourth pair of cerebral nerves was sound; the medullary substance had its ordinary whiteness and consistency; but below this point this consistency and this whiteness suddenly changed. It appeared that the marrow was converted into a cellular substance, distended with a pale rose-coloured serum, as far as the sixth pair of cerebral nerves, a place in which there no longer existed but a broad cavity, of which the sides were only formed by the vascular and serous membranes of the marrow and the remains of the medullary matter. This disorganization was remarkable as far as the fourth pair of dorsal nerves; but this alteration penetrated like a cave into the midst of the medullary substance, which appeared there with its natural properties.

The eight lower inches of the organ showed no alteration. Some nerves were dissected and followed, those of the brachial plexus, in particular, as corresponding to the disorganization; they, as well as their ganglions, were found without any alteration. The lungs, apparently soft and crackling in their anterior part, were not sound; they adhered in their posterior part to the costal pleura in too loose a manner. The left lung contained in its superior lobe some thin and dispersed tubercles; the posterior edge was filled with blood. The right lung, more diseased, presented in the same region the same aspect; it had there the appearance of hepatization, and presented many reunions of suppurated tubercles, of which some swellings were ossified.

In the belly, the stomach, sufficiently dilated, was in a healthy state; so also were the other viscera, with the exception of some parts of the intestines, of which the different membranes, being very much injected, were of rather a dark red and slightly livid. Some blackish spots, externally visible, corresponded to some small denticular ulcers of the corresponding mucous membrane.

The bladder was small and thick, but sound.

Remarks by M. MAGENDIE, *on the foregoing Case.*

To how many reflections does the preceding fact give rise! A man enjoying, almost to his last hour, great moral activity, powerful generative faculties, a free movement of his inferior

members, and sensibility in his upper ones, had probably suffered for a long time the loss of above a third of the nervous matter of his spinal marrow; the communication between the cerebral and dorsal part of this marrow was, if such an expression may be allowed, no longer maintained except by the membranes; for it has been seen that there only remained a thin layer of white substance scarcely two lines in breadth, and very probably altered in its structure. The cavity from whence the medullary matter had disappeared was filled with serum. There was, therefore, an almost complete isolation of the superior and inferior parts of the marrow, and that for above six or seven inches in length; yet the will exercised its power over the inferior members; the imagination stimulated the genital organs, and these transmitted to the sensitive brain the lively emotions of pleasure.

These two parts of the marrow thus persisting in keeping up their communication is worthy of all our attention. Some motives for a curious experiment may be deduced from it. The great sympathetic nerve was without doubt the medium of it; for all sections, or even all compressions of the marrow, intercept the determination of the will relatively to the motions, and render the parts which receive their nerves insensible from the point of the marrow which is below the part compressed. The thin layer of medullary substance, and the proper membranes of the marrow, therefore, remain. If it be imagined that it is the stratum of nervous matter, it must be thought very extraordinary, that notwithstanding its small breadth and thickness, it performs this function as well as the marrow in its sound state, and that there has not been at least some diminution, either in the rapidity, or, if I may thus speak, in the perfection of the transmission.

If, on the contrary, it be found that so narrow a medullary stratum cannot be sufficient to explain the phenomena, it must necessarily be inquired if the vascular and serous membranes would not be proper for the nervous transmission. Up to the present time, it is true, nothing has afforded cause for suspicion, but on the other hand nothing formally opposes it: here is a new and very important subject of inquiry. The conjecture is here the more allowable, as in the case which fell under our observation, the membranes of the marrow were perfectly sound.

With regard to the motion of the heart, the fact of M. Rullier is not less curious; for after the investigations of Le Galois, a considerable diminution of the mass of the spinal marrow ought so to diminish the force of contraction in the heart, that the blood would not be able to arrive continually at the lower extremities; and yet the circulation was perfectly maintained.

The contraction of the upper members, with a continuance of

sensibility, deserves also to be remarked; for the posterior portions of the marrow, where the sensibility particularly resides, had disappeared, from all the pairs of nerves which supply the brachial plexus. Thus the sensibility of the arms could not have its ordinary source, viz. that which is connected with the posterior roots. Reasoning after my experiment, there remain, therefore, the anterior roots which give the entire movement, but which, as I have observed, are not incapable of sensibility. Now these roots extended as far as the medullary stratum of communication, and, in this point of view, there will be no difficulty in explaining it, if it be supposed, which is not impossible, that during life a thin layer existed to the left, as one existed to the right. But a circumstance of greater interest is that the anterior roots, as I have recently discovered in the piece preserved, had lost their medullary matter, and were reduced to their neurilema, as is the case with the wasted optic nerve. The posterior roots, on the contrary, had retained their nervous matter as far as their junction with the membranes of the marrow. Every where else, except in that part of the marrow which was altered, the anterior and posterior roots alike presented the medullary matter.

This pathological disposition of the anterior roots of the brachial nerves is well connected with the complete immobility of the arms; but it with difficulty allows a belief that they were the agents of the sensibility. Why, on the contrary, should not the posterior roots which, far from being wasted, were in their ordinary state, and consequently were filled with the medullary substance, be the organs through which the arms of the patient preserved their sensibility, and occasionally even suffered an acute pain?

This again leads us to conjecture that the immediate envelops of the marrow might be the conductors of the sensibility, or be themselves sensitive parts. It has been seen, in the experiments which I have before mentioned, that a simple contact of the serous membrane of the marrow occasions an acute pain, if the posterior part of the organ be touched. I, together with M. Dupuy, have recently established this interesting fact by operating on a horse.

An anatomical disposition which is extremely visible on the piece I have preserved, is that the interior cellular tissue of the marrow, in the cellules of which the medullary matter is probably deposed, established a solid connexion between the anterior and posterior part of the marrow: it was on the layers of this tissue that the blood vessels ramified.

To sum up every thing, we shall repeat that the observations of M. Rullier show that we have still much to learn with regard to the functions of the spinal marrow. This should induce per-

sons engaged in pathological anatomy to lose no opportunity of examining this part, and even of preserving it, if it present any irregular formation.

On the Employment of Belladonna in various Diseases. By Powell Charles Blackett, Esq., Member of the Royal College of Surgeons, London.

(From the London Medical Repository for June, 1823.)

Having employed the atropa belladonna with great advantage in several nervous and inflammatory disorders, I am desirous to draw the attention of the readers of the Repository to the subject. The particular preparation of this medicine, which I have been in the habit of using, is a very strong tincture made from the extract in the following proportions: take ten drachms of the most carefully prepared extract of belladonna and one pound of proof spirit, macerate for fourteen days, and then filter. I endeavour to procure the extract in a state of its greatest activity, and possessing the virtues of the plant undiminished in the preparation, and I consequently find a single drop of the tincture which is made from it to be more efficacious than a quarter of a grain dose of the extract, as it is usually obtained from the druggists.

I have frequently employed this tincture in cases of mania, in various forms of convulsions, in hysteria, and in pertussis, with decided efficacy. In all cases of its internal use, I have commenced with small doses, generally with two or three minims in the day. I have been led to embrace this cautious mode of commencing the remedy, because I have found that when given at first in a larger dose, owing to peculiar states of the constitution, especially in old subjects, it sometimes depresses the powers of life to a greater extent than was wished. The rapidity with which I have increased the dose, or the extent to which I have carried it, has always been regulated by its effects, by the circumstances of the case, and by the constitution of the patient; always keeping it in mind, that its effects occasionally are not very marked for some time, when they suddenly evince themselves in a very decided manner; thus showing that, in some instances, it does not act upon the nervous system until its exhibition has been carried to a certain extent, when its effects are quickly expressed throughout the whole frame.

In several forms of cutaneous or superficial inflammation, I have experienced the greatest service from the external use of this tincture, either when added to a lotion, or to any ointment

which appeared most suitable, in other respects, to the particular nature of the case. When I have employed it in a lotion, a drachm of the tincture to eight ounces of the liquid has been the proportion adopted, and in this form I have found it very beneficial in external inflammations and in irritable ulcers.

I have used the extract either alone, or combined with some ointment, with decided advantage, in spasmodic stricture of the rectum; and I have found it useful in gonorrhœa, especially when chordee was present, when conjoined with double the quantity of mercurial ointment, and rubbed along the course of the urethra. Without offering more general remarks on the use of this narcotic, I shall conclude with the particulars of a case of mania in which I gave it with advantage, after other modes of treatment had failed in accomplishing a cure, although they may have acted beneficially in disposing the system of the patient to the influence of the belladonna.

5th March, 1819.—C. G., aged forty-eight, of a pale complexion and spare habit, who had been accustomed to a very active life, became, in consequence of repeated misfortunes in business, the subject of mental derangement, in the form of melancholia, and being of a religious disposition, his mind was constantly filled with apprehensions of his future state. I saw him about two weeks after these commencing symptoms of derangement, when he had all the actions of a furious maniac. His bowels were constipated; his tongue foul; urine in small quantity, and of a high colour; pulse 86; skin dry and hot. He complained of pain at the scrobic. cordis. After subjecting him to the usual mode of coercion, a course of purgatives, combined with anodynes and occasional injections, was entered on, general and local blood-lettings were employed, and blisters applied to the nape of the neck. This treatment, which was varied according to circumstances, and conjoined with various internal remedies, was continued until the 5th of April, when I resolved to employ the belladonna, from the circumstance of my having used it with success in four cases of a similar nature; it was prescribed in the following manner:—

℞ Mist. Camphoræ, ℥vss.
Tinct. Belladonnæ, ♏ij.
Liquor. Antim. Tart., ℥iij. M.
Capiat cochlear. dua ampla, sextis horis.

April 6th.—The symptoms were much the same as before, but he had passed a considerable quantity of urine. A draught, composed of camboge and infusion of senna, was ordered, on account of the confined state of his bowels, and directed to be repeated when circumstances required it.

10th.—The urine was greatly increased; and the symptoms

of derangement were not so violent. His bowels were natural; his tongue clean; his pulse at 76, and regular. He was directed to take *three* tablespoonsful of the mixture every four hours.

17th.—He has passed the nights in a more composed state, and has enjoyed some lucid intervals. Pulse 70; tongue clean; bowels regular; the pupils of the eyes rather dilated.

℞ Mist. Camphoræ, ℥vijss.
Tinct. Belladonnæ, ♏iv.
Acid, Citrici, ℈j. M.
Capiat cochlear. tria magna quartâ quâque horâ.

20th.—The pupils are quite dilated, and attended with loss of sight, and a great propensity to sleep. The countenance was rather flushed, but all the symptoms of mental derangement had left him. His pulse, tongue, and bowels, were natural.

The belladonna was discontinued for seven days, when his sight returned. His countenance was quite calm and cheerful. The following mixture was now used:—

℞ Aquæ Menthæ Viridis, ℥viij.
Tincturæ Belladonnæ, ♏ij.
ft. mist. cujus capiat cochlearia tria magna, nocte maneque.

This mixture was continued for three weeks, and an aperient draught given occasionally. He has continued well from that period up to the present, without the least appearance of a relapse.

From the experience I have had of this remedy, I consider that we cannot expect much benefit from its internal use until it has nearly produced a temporary loss of sight.

Park Street, Grosvenor Square, April 11th, 1823.

On Syphilitic Ulcers of the Larynx. By Cæsar H. Hawkins, Member of the Royal College of Surgeons.

(From the London Medical and Physical Journal for June, 1823.)

There are few diseases so frightful to the bystander, and so formidable to the patient himself, as those to which the larynx is subject. The dread, and indeed the actual danger, of suffocation is so urgent, that it is not surprising that the disorders which produce so distressing a state should have long engaged the anxious attention of the Physician. But, while so much has been done in the investigation of some other affections of this organ, it is somewhat remarkable that scarcely any attention has been paid to the subject of ulceration of the larynx.

This neglect is particularly striking in the numerous systematic works that have been devoted to the consideration of syphilis, as it is a frequent and very fatal symptom of this disorder. Perhaps it may be objected, that ulcers in the larynx are not in reality of venereal origin; that they will rarely, if ever, occur, where the venereal disease has been allowed to run its career unchecked. That ulcers in the larynx are sometimes the result of common inflammation in this part cannot be doubted, as they have been found in children who have died after inflammation of the air-tubes; but, as the following observations were chiefly made during a residence as house-surgeon at the Lock Hospital, the affection of the throat has, in almost all the cases I have witnessed, been accompanied by some other venereal symptom, or the patients have suffered from the previous ravages of the venereal virus; and if so, they as well deserve the name of venereal as many other diseases which are usually attributed to its baneful influence. I have, however, seen cases of ulcerated larynx, where the history of the previous symptoms, the time which had elapsed since the reception of the primary symptoms, or some other circumstances, have afforded strong grounds of belief that the disease is strictly syphilitic, even confining the term exclusively to the symptoms which follow that peculiar primary sore, to which the name of chancre has been exclusively given.

The symptoms of ulcerated larynx in some measure resemble those of idiopathic inflammation: there is however this essential difference, that, instead of arising in persons of robust health and inflammatory diathesis, they appear, for the most part, to occur in persons originally of languid and unhealthy constitutions, or whose health has been undermined by the ravages of the venereal virus, or its scarcely less formidable antidote.

The disease of the larynx is most frequently the consequence of previous ulceration in the superior part of the fauces, and it is probable that any sloughing ulcer of the throat may extend downwards to the cartilages of the larynx; but there are principally three kinds of ulcers in the throat, which are apt in this manner to affect the larynx. One of these ulcers is very rapid in its progress, and of a more acute form; the second, and most common ulcer, often takes some weeks, or a still longer period of time, before it arrives at any formidable height: hence they may be denominated, respectively, the acute and the chronic sloughing ulcers of the throat. The third, and least common kind of ulcer, may be called, from the peculiar mode of its appearance, the painful sloughing ulcer.

The progress of these ulcers may naturally be divided into three stages; in the first of which the ulceration is confined to the fauces; in the second it has extended to the larynx; and, if

it be not fatal in one or other of these stages, the lungs or trachea become implicated in the mischief, and death, in this third stage, terminates the sufferings of the patient.

The first description of ulcer in the throat, which is apt to spread to the larynx, begins in the tonsils, in which a deep ulcer will be seen, containing a thick black slough, which so rapidly extends, that it deserves the name of the acute sloughing ulcer. The black sloughs do not separate and successively form, as is sometimes the case in the other species, but portions of the sound parts become every successive day involved in the slough, which hangs by shreds from the palate and pharynx; the secretion of saliva being very much increased. The countenance is, almost from the beginning, bloated, and of a dark venous hue, before the symptoms of ulcerated larynx begin, and consequently before the blue colour can arise from any obstruction in the larynx itself. It rather appears to originate in the excessive languor of the circulation; a debility which it is impossible to remove, and which is such that the act of respiration itself appears to be too great a labour for the muscles to sustain. The slow passage of the blood through the lungs produces a copious secretion of mucus from the air-cells, which threatens to put an entire stop to the circulation. If the epiglottis and arytænoid cartilages become affected, the destruction of the patient is inevitable. The throat is so excessively irritable, that not the slightest stimulus can be borne. The cells of the mucous membrane become gorged with serum, and fill up the aperture of the glottis; the parts having very much the appearance of an erysipelatous affection, to which disease this kind of ulceration really bears considerable resemblance, both in its progress and termination. The death may sometimes occur without the acute symptoms of ulcerated glottis, so that the patient may sink gradually till within the last few minutes.

The second, or chronic ulcer, occurs chiefly in persons who have used mercury for this or some other form of the venereal disease; so that, perhaps, some doubts may be felt as to the origin of this species, even by those who grant the syphilitic nature of the acute kind. But, as few persons have suspicious symptoms of any severity without having taken mercury in some stage of their progress, except in situations where they are completely under the control of their medical attendants during the whole progress of the disease, the same doubts might be felt with regard to almost every other symptom of the venereal disease, particularly those usually called syphiloid or cachectic, if they had not each of them occasionally been observed after primary sores, for which no mercury had been exhibited. These observations particularly apply to the lower orders in the metropolis. It is not, however, of material importance to at-

tach a name to the ulcer, as the employment of mercury is, in general, wholly inadmissible.

This ulcer consists of a slough of a yellowish-brown colour, beginning generally in the pharynx, just behind the posterior arch of the palate, or else immediately behind the tonsil, on one or both sides. The slough is smooth and uniform in its appearance; it is not very deep, and the edges are on the same level with the surrounding soft parts. If it is on the increase, the immediate edge of the sound part has an irritable appearance, with a mixture of red and yellow streaks or spots, the red lines being gradually lost, so as to enlarge the size of the slough, without any apparent breach of continuity between the slough and the healthy pharynx. The local symptoms attending this ulcer in the pharynx are very frequently of an extremely mild nature, so that the whole pharynx may be covered with dark yellow sloughs, while the patient complains of little more than an uncomfortable sensation in swallowing, not actually amounting to pain; for, in fact, the ulceration itself is not the cause of pain, so much as the contact of the food with the ulcerated surface, which cannot take place till the healing process has begun, and the separation of the sloughs has commenced. But, in general, although the patient himself does not suffer very much, his system sympathizes with the extensive destruction which has ensued: the countenance is that of general ill health, with an exceedingly quick, weak, and irritable pulse, loss of appetite, broken unquiet sleep, and very great emaciation and debility.

The last kind of ulcer which I shall describe is preceded, for two or three weeks before the appearance of any ulceration, by most excruciating pain, generally situated in the posterior part of the pharynx about the centre; the redness and other inflammatory appearances being very slight, but the difficulty in swallowing so very great that the patient's strength can scarcely be supported. At last a deep circular ulcer is perceived, which rapidly destroys the muscular part of the pharynx by sloughing, resembling the acute ulcer in appearance, and in being unaccompanied with any suppuration, but with more dryness of the mouth, and a fever, more of the inflammatory than of the typhoid character. In one case, the acute pain was followed by the appearance of several little ulcers, which very quickly spread into each other. I have not had an opportunity of observing this last kind of ulcer, except in its first stage: I have been informed, however, on authority which I cannot doubt, that it is liable to extend to the larynx, though not so frequently as the other two which I have described.

Allowing for some slight differences, arising from the degree

of acuteness, the symptoms of the second stage are so nearly alike, from whichever of these ulcers the larynx is affected, that I shall describe, chiefly, those which arise from the second; as, from its chronic nature, the symptoms are more easily marked, and the disease necessarily more easily cured.

With such symptoms as those which have been enumerated, the ulceration gradually proceeds till the epiglottis and arytænoid cartilages become involved in the disease. It is, however, somewhat remarkable that the severity of the symptoms does not gradually increase in proportion to the extent of the ulcer, but continues of nearly the same degree of violence till the larynx is ulcerated; and then a fresh series of symptoms suddenly appear, constituting what I have called the second stage of the disease. For instance, a woman had extensive ulcers in the throat, which resisted every mode of treatment for many months. Nothing could rouse her constitution from the excessive languor into which it had sunk: but suddenly some accidental cause, such as a crumb of bread having fallen into the glottis, which had probably been some time diseased, caused a fresh activity in the ulcer, and gave rise to a new set of symptoms, which were fatal in a few days.

At this period the voice loses its sonorousness, so that it becomes little more than a whisper, each attempt to converse producing a suffocating cough. Each act of inspiration is attended with a peculiar rattling noise, (different, however, from that of croup,) while that of expiration is comparatively easy. The muscles of the larynx and os hyoides are in constant and violent action, so that the larynx cannot be held steady for an instant; and at every inspiration the head is elevated, as if to give greater freedom to the entrance of the air, by straightening the tube through which it has to pass. If the difficulty of breathing be very great, the arms are tossed about in rapid and unceasing motion; while the eyes are fixed and projecting, or drawn up under the upper eyelid, so as to hide the pupil. The sleep is sparing, and broken by starts, with the dread of impending suffocation. The countenance is generally pale, and expressive of the greatest anxiety; the face being covered with a greasy secretion, or bathed in profuse perspiration. The pulse is rapid in the extreme, so as scarcely to be counted; it is weak and excessively irritable; while the whole nervous system appears to be sunk in the depth of languor and debility.

If the disease is accompanied with inflammation of the chest, the state of the pulse is liable to be affected. In one case, where there were repeated attacks of inflammation, the pulse, although weak in general, had the peculiar wiry feel of active inflammatory action; and in another, it was even full and hard. Such a combination of disease is particularly dangerous, as the

treatment necessary for one may be improper for the other affection.

But the most marked symptoms are those which affect the larynx itself. These are excessive pain and tenderness of the larynx, not general, but most commonly so far circumscribed that it is possible to distinguish whether the thyroid or cricoid cartilage is affected, and even which side of each individual cartilage: indeed, it is sometimes possible to cover with the point of the finger the spot which is the seat of the ulceration, as I have ascertained by dissection. When solid food is swallowed, it produces some degree of pain, but inferior to that of an acute inflammation of the pharynx, and in general is swallowed without material uneasiness; but the attempt to swallow fluids is invariably followed by acute pain and severe cough, arising, no doubt, from the insufficient closure of the glottis, in consequence of the morbid state of the muscles which regulate its actions; the irritation not being material from the deglutition of a solid morsel. Mr. SHAW, however, has recorded a case of ulcerated larynx, in which there was so much difficulty of swallowing, that it was treated as a stricture of the œsophagus, till the employment of an opiate proved the difficulty to have been merely spasmodic.* I have heard the difficulty of deglutition remarked as a distinction between ulceration of the larynx below the glottis, and an ulcer involving also the parts above the chordæ vocales,—that the difficulty exists in the latter case, but is not present in the former. That the difficulty of swallowing is greater where the pharynx is ulcerated, must be evident; and perhaps there may be none where the ulcer is below the glottis. The circumstance, however, to which I would attach importance, is not a difficulty of deglutition, but the fact of a few drops of fluid almost always entering and irritating the glottis; the rest of the liquid being swallowed without any effort. The fluid enters the glottis in cases where the epiglottis is entire, and persons have been known to swallow with tolerable ease after it has been destroyed; facts which might be expected from the experiments of Majendie, and which prove that it is the affection of the muscles which produce the irregular deglutition, and not the loss of the mechanical assistance of the epiglottis.

Such are the most prominent symptoms of an ulcer in the larynx; they are constant, but vary in their intensity at different times; and their severity is by no means proportionate to the extent of the ulceration in different individuals.

There is one affection of the larynx which occurs so long after the preceding ulceration of the upper part of the throat, that it cannot always be traced to it, and perhaps may some-

* London Medical and Physical Journal, vol. xlviii. page 184.

times occur as a specific disease of the larynx. It is well known that the larynx is not unfrequently found to undergo a change, similar to that which takes place in the arteries of all old persons, the whole of the cartilages being sometimes converted into bone. The disease, however, to which I allude is the change of part of one of the cartilages into bone, occurring in persons before the whole system has acquired that state which disposes to the deposition of ossific matter, and appearing, therefore, to arise from some local action. It is possibly the result of long-continued inflammatory action of a mild nature. I have only happened to see two cases of this nature, though I have been informed of several others. In one, the greater part of the cricoid cartilage was changed into bone, some of which lay loose and carious in an ulcer of considerable extent. In the other, a man who died in St. George's Hospital, there was an abscess in the left side of the thyroid cartilage, very near the sacculus laryngis, containing several pieces of exfoliated bone. The symptoms in these cases appear to be very nearly the same as in the common ulcers of the larynx, unless there is a difference in the voice, which has a hoarse raucous sound. In the last of the cases above mentioned, there was, it is true, no actual ulceration of the inner membrane of the larynx; yet the proximity of the abscess to the glottis will easily account for there being the same excitement of the muscles.

Mr. C. Bell* has mentioned the suffocation arising from hysteria, as in some measure like that of an ulcer in the larynx; a very little observation, however, of the countenance will show the trifling similitude between the two diseases; but the symptoms which have been enumerated as belonging to ulcerated larynx bear so much resemblance to those of cynanche laryngea, that it is of importance to point out some essential differences, in order to establish an accurate diagnosis between the two diseases; particularly as it often happens that there may be no ulceration in the throat high enough to be apparent on inspection. But, although a view of the ulcer may be denied us, we can sometimes ascertain whether one be present, by examination as far as the rima glottidis. If the finger is pressed firmly on the tongue, so as to avoid titillation, it may be passed round the epiglottis, and borne a sufficient time to ascertain the existence of ulceration, by the roughness or other deviation from the natural surface of the part. There are also some differences when the ulcer is below the rima glottidis. In cynanche, there is not the circumscribed tenderness of ulceration; there is much more pain in the deglutition of solid substances; and the swallowing fluids does not excite the peculiar action of the muscles of the

* *Surgical Observations*, part i. page 40.

glottis, or not in the same degree; there is also a difference in the voice.

But one of the chief diagnostic marks between ulceration and simple inflammation of the larynx, is perceptible in the state of the circulation. The pulse in the latter, as in almost all acute inflammations is full and hard; the countenance flushed, and the eyes suffused with blood; "febris acuta et fere ardens, facie florida, deinde livescens." The change of colour does not begin till quite the last stage of a very acute disorder rapidly coming to a crisis; the reverse of all these circumstances generally obtaining in ulceration of the glottis. It is true that, in the latter stages of inflammation, it may be impossible to distinguish between them, or any other affection of the respiratory organs, a short time previous to death; but, in nearly all the numerous cases of cynanche laryngea recorded in the Medico-Chirurgical Transactions, where the medical attendant was called in early, large bleeding was the first remedy which occurred to his mind, from the evidently increased force of the circulation.*

The larynx is also found in a different state after death; the tube being always more or less obstructed after simple inflammation, either by effusion beneath the mucous coat, and consequent thickening of the membrane, or, more rarely, by the deposition of a false membrane, as is always the case in cynanche trachealis. In ulceration, the difficulty of respiration arises much more from irritation than from any actual impediment to the entrance of the air; and in some specimens, so far from the glottis being obstructed, the whole larynx and trachea have been found of preternatural size, so that the finger might be passed through the glottis. The expectoration is also more purulent than in cynanche laryngea.

The ulcers in the larynx vary in size, from that of a split bean, or almond, to the diameter of an inch or more. The side of the arytænoid cartilages appears to be their most frequent situation, as might be expected from their origin behind the tonsils. The epiglottis is, however, sometimes alone affected; and the largest ulcer I have seen was situated in the posterior part of the cricoid cartilage and sides of the thyroid. In one case, the ulceration had eaten away the upper part of both arytænoid cartilages, and laid bare the cornua of the os hyoides and thyroid cartilages: the horns of the former, having been deprived of vitality by this means, were of a black colour, and projected into the œsophagus. The epiglottis is sometimes wasted, or even completely destroyed. An abscess round the larynx sometimes involves the larynx itself in destruction: in

* See particularly vol. vi. pages 138 and 148.

such cases, the arytænoid cartilages not unfrequently slough off, or are found about to do so after death.

The ulcer in general has a ragged, irregular surface, the deeper parts being thickened so as in some measure to supply the loss of substance occasioned by the ulceration. If the tonsils have not been lost previous to death, their ducts are seen much enlarged, and so irregular that to a superficial observer they will have the appearance of ulcers.

The third stage of laryngeal ulceration is when the lungs and trachea become affected.

The difficulty of respiration produces so great a degree of fulness of the vessels of the lungs, that a quantity of watery fluid is poured out, which completely prevents the purification of the blood. Sudden death from this cause is not uncommon: hence it has been called, by some pathologists, an apoplexy or dropsy of the lungs. It has already been mentioned, that a degree of active inflammation is occasionally excited, which materially interferes with the treatment necessary for the ulcers.

By far the most frequent sequel of ulcers in the larynx, is, however, the common tubercular phthisis of the lungs, the intermediate parts of the trachea and bronchia being free from ulceration. Whether phthisis pulmonalis is actually produced by the laryngeal ulcer, or whether it only excites a latent predisposition to tubercular formation, it is not of material importance to determine. A modern writer* has, indeed, actually given the name of venereal to the consumption which occurs in syphilitic patients, and has proposed the employment of mercury for its cure. It is sufficient, however, for our present purpose to observe, that symptoms of consumption will often show themselves after an attack of ulceration in the larynx, and most rapidly terminate by the dissolution of the patient.

Symptoms of consumption are sometimes produced by ulcers in the larynx and trachea, the lungs being at the same time healthy. To this disease the name of Phthisis Laryngea has been given; a long-continued cough, with purulent expectoration, gradually exhausting the patient, the suppuration having reduced him to the most extreme state of emaciation. The ulceration in such cases sometimes extends down the trachea, and even into the bifurcation of the bronchiæ; the whole of the inner membrane being irregularly studded with ulcers, having a honeycomb appearance; even the rings of the trachea are sometimes eroded and sloughy. The great extent of the disease in such cases may perhaps arise from the chronic nature of the ulceration, which is not severe enough to excite those symptoms of ulceration of the glottis, so often fatal before those of consumption commence.

* M. Lagneau. See *Foreign Quarterly Journal*, vol. iv. p. 529.

It is asserted by some persons that it is most difficult, or altogether impossible, to distinguish between phthisis pulmonalis and phthisis laryngea. The cough, the purulent discharge, the emaciation, the hectic, are, it is true, common to both diseases; but still, I think, there are some marks by which they may be known. These are to be found in the peculiar form of the chest of consumptive persons; in the extent to which the patient has the power of expanding his lungs, which is almost always limited by the alteration of their structure, which takes place in phthisis pulmonalis; in the sound emitted from the chest by percussion, the change of tone being commonly perceptible by simple tapping with the fingers, even without the assistance of the stethoscope, to which so much importance is at present attached. Add to which the fact, that tapping the ribs gently will almost always excite coughing in persons whose lungs are unhealthy, while sound lungs will scarcely be affected by it.

I have thus endeavoured to point out some of the most characteristic marks of ulceration of the glottis. I have done this, perhaps, at greater length than some persons may think the occasion deserves, and dwelt too much on points of minor interest; but I believe it is only by attention to these minutiæ that an accurate diagnosis can be established, the correctness of which must be of the last importance; for the treatment, which will be successful in some of the diseases of the larynx, will be useless or prejudicial in others, which are apparently of similar character.

In the first few cases of ulcerated larynx which I saw, although the existence of the ulcer was known or suspected, the symptoms resembled so much those of cynanche laryngea, that the same means were resorted to which are usually employed with success for that disease. I have seen leeches and blisters applied repeatedly in the same persons; I have bled to syncope; I have given calomel to salivation, according to Dr. Cheyne's recommendation; and no progress has been made towards the cure. Recourse was then had to the means presently to be mentioned; and the same patients, who had suffered frequent relapses for the two or three preceding weeks, have become in as many days nearly convalescent.

Possibly, too, on the first inspection of a throat covered with ulcers, perhaps syphilitic in their appearance, or connected with a very suspicious history, an inexperienced practitioner might be tempted to employ mercury; and that, perhaps, introduced with a rapidity proportionate to the urgency of the symptoms.

The *acute sloughing ulcer*, which was first described, is of such a nature that it will often be fatal under the most judicious treatment. The depression of the whole system is so excessive, that the most powerful stimuli may fail to rouse the constitu-

tion; and although they seem to be the only means to which we can have recourse, their exhibition requires perhaps considerable caution and judgment; for the inflammation of the throat itself is very high, while the general system is in the lowest state of debility; and there is so much local irritability, that the passage of medicine and food may of itself be sufficient to increase the rapidity of the sloughing.

The best method, therefore, appears to be, to endeavour to soothe the parts, (for which purpose the steam from hemlock-leaves will often be found effectual,) while we support the system rather by nutritious diet than by strong cordials. Ammonia is of great service in such cases, and it may be given at the same time with sarsaparilla; which latter medicine is, perhaps, one of the most powerful means we possess for the support of the strength, independent of any antisyphilitic virtues which it may boast of. The best form in which we can exhibit it with this intention, is perhaps the syrup, which can be made of greater strength than the usual preparations, and acts more speedily upon the constitution; nor, perhaps, are the highly nutritious qualities of the sugar to be lost sight of. Its chief fault is a liability to offend the stomach; the tendency to which will, however, generally be counteracted by the addition of a little tincture of ginger, or some other aromatic. After the desired effect has been obtained, and the violence of the disease checked, some other form of the medicine, or some tonic, may be substituted for the syrup of sarsaparilla.

The second species of ulcer to be mentioned, is that to which I have given the name of *the chronic sloughing ulcer of the throat.* There are few diseases, so formidable in appearance, which are so completely under the control of medicine, as this ulcer is in most cases. As an illustration of the treatment proper in such cases, and of the powerful agency of our curative means, I will mention the case of a person who had an ulcer of this description, which had destroyed the tonsils and uvula and part of the soft palate, and occupied the whole of the posterior part and sides of the pharynx, as high up in the nares as could be seen, the lower part reaching below where the membrane is visible. He had become much emaciated during the three preceding months, and had an irritable pulse, beating 140 times in a minute, with nocturnal perspirations and very great prostration of strength. He took a pint of the Lisbon diet-drink, and fumigated his throat twice a-day with the red sulphuret of mercury. In ten days, his pulse had sunk to 70, and had become quite soft and regular; his throat was very nearly cicatrized, and he had already gained flesh considerably. Other stimulants, such as the linimentum æruginis, or tinct. benz. c., may be substituted for the fumigations, if they are not thought advisable;

but I think no internal medicine can be employed with the same advantage as the sarsaparilla.

I have seen too little of *the painful ulcer of the throat*, to recommend any thing with confidence from my own experience. Two cases, which I have heard described, were cured by mercury, even although the disease had in one of them extended to the glottis. There are, however, so few sloughing sores with which mercury agrees, and the risk, if it does not suit any individual ulcer, is so considerable, that at least the utmost degree of attention should be paid to its effects. I should rather be inclined to trust the cure to very large doses of solid opium, or at least delay the employment of mercury till the excessive pain is relieved, which is alone sufficient to keep up that state of the system on which the sloughing of a sore depends. It has already been mentioned, that the difficulty of swallowing is very great, so that life has in some cases been sustained chiefly by nourishing enemata.

Many persons have doubted the possibility of our effecting a cure, if the ulceration has once extended to the larynx itself. This opinion appears to me, however, to be erroneous, as, in one or two instances which I have examined, I have seen what had all the appearances of cicatrices from former ulcerations. This was particularly observable in the larynx of a woman who had all the usual symptoms of ulcerated larynx in a severe degree, and was discharged cured. She continued well for several months, and was then readmitted into the Lock Hospital, with a return of the symptoms, accompanied with phthisis pulmonalis; of which she died. An ulcer was seen in one side of the glottis, with a ragged depression in another part of the larynx, which was probably the remains of the previous attack. Judging from their resemblance in feeling to some fatal cases, where dissection had verified the observation previously made with the finger, I believe that I have felt ulceration of the epiglottis and sides of the chordæ vocales, in persons who have been afterwards cured. In one very remarkable case, after the symptoms of ulcerated larynx had subsided, the cicatrix seemed to have so far contracted as nearly to close the glottis, producing very great difficulty of breathing, with a noise evidently showing the small size of the tube through which the air had to pass. The greatest relief was obtained by the occurrence of fresh ulceration in the lower part of the pharynx, which appeared to have in some measure reopened the cicatrix of the former ulceration.

The most dangerous symptoms attending ulceration of the larynx, have been stated to arise from the difficulty of breathing; and this takes place, not from any actual impediment to the passage of the air through the larynx, but from a spasmodic action of the muscles of the glottis, produced by the ulcers in

the vicinity. The consequence of this difficult respiration is the excessive debility of the patient, from the insufficient supply of arterial blood: and here, perhaps, the prostration of strength and death of the patients do not arise so much from want of nutrition, as from the circulation of dark venous blood through the body, by which the brain and nervous system become oppressed. For the emaciation of the patient is not always in proportion to the extreme degree of languor and debility under which he labours; and in one case the patient died in convulsions, as if from an affection of the brain.

This view of the subject will easily account for the inefficacy of common antiphlogistic treatment in this stage of the disease;* for, if the symptoms are for a time relieved by them, the actual cause, namely, the ulcer in the larynx, remains unaffected and incurable by these means. The symptoms will therefore return again and again, till the cause is removed.

There are, therefore, two objects which we ought to aim at in the management of ulcerated glottis: the first is, to relieve the excessive irritation produced by the ulcer, which threatens to destroy our patient, before much progress can be made in the healing of the ulcer itself; and, having thus in some measure ameliorated the most urgent symptoms, the cure of the ulceration itself must next engross our attention.

Several plans may be tried in order to gain the first object; such as inhaling the vapour of a strong infusion of conium or opium, or of nitric acid diluted with warm water. If the ulcer can be touched with the finger, the solution of lunar caustic may be applied, in the manner recommended by Mr. Charles Bell,† which appears to perform the same part here that it does in severe cases of spasmodic stricture of the urethra. It does not act as an escharotic, but simply diminishes the nervous irritability on which the contractions of the muscles depends. On the whole, however, I believe that fumigations of cinnabar are by far the most powerful means we possess of effecting this purpose. Very great relief is often experienced from the first time this plan is resorted to. Half a drachm or a drachm of the red sulphuret of mercury may be used once or twice a day, according to the facility with which it is borne, or the benefit that is derived from it. The mercurial fumigation is not employed with a view to its specific action upon the system, for its effects are equally obvious when the constitution is not at all affected by it, as when the gums are made sore by its employment: salivation, indeed, to any great degree, would be disadvantageous, and perhaps dangerous. The action of the cinnabar rather ap-

* Medico-Chirurgical Transactions, vol. vi. p. 249.
† Surgical Observations, part i. p. 36.

pears to be local, though it would perhaps be difficult to explain exactly the manner in which it acts.

It must be obvious that the use of the two latter remedies are chiefly applicable to those ulcers which follow the chronic ulcer of the throat; and that the soothing plan is most appropriate in the more acute and inflammatory species, while the violent local action exists.

As a few hours are often of consequence, we may call in the aid of leeches and blisters to the throat, or even of general bleeding, if circumstances require it; for, although these means are not to be trusted as our principal remedies, they are sometimes very useful auxiliaries.

Having checked the most urgent symptoms by some of the preceding plans, we gain time to effect such a change upon the system as to ensure the healing of the ulcer. For this purpose sarsaparilla may be given, which requires a few days before its virtues are exerted in any sensible degree, and should therefore be generally employed from the beginning, in the manner before mentioned: or, if we wish for a more immediate change in the constitution, we may employ bark in large quantities, the effects of which may be obtained in a few hours. I prefer, however, the less obvious, but more steady, action of sarsaparilla. The employment of ammonia in pretty large doses is of great service in some cases. At the same time, the diet must not be neglected; but it should, in general, be light and nourishing.

After a few days, if the case goes on favourably, a very great change is perceived in the symptoms. The respiration becomes less laborious, and the patient is no longer disturbed in his sleep by convulsive starts; he can swallow without inconvenience; his pulse changes its character; and the colour of the lips and surface of the body returns to a healthy state.

How far the operation of bronchotomy may be successful in cases of ulcerated larynx, is a question of some importance. I have only seen it performed in one case of this kind, which was a disease of the larynx following the acute sloughing ulcer of the throat. The patient was seized with a sudden fit of difficult respiration, having all the appearance of spasmodic action of the muscles of the glottis. He was evidently so nearly dead, (and in fact he died in less than five minutes after the seizure,) that I considered myself justified in opening the larynx immediately, as the only possible means of saving his life. He scarcely lived long enough, however, to breathe through the artificial opening; nor was his recovery to be expected, from the large quantity of frothy mucus with which the lungs were gorged.

In Mr. Lawrence's paper on the Affections of the Larynx

requiring the operation of Bronchotomy,* a number of successful cases are recorded; but almost all of them were performed for the extraction of foreign bodies, or for acute diseases of the larynx; and I do not recollect any successful case, in which ulceration of the larynx was known or suspected to exist, although there are several cases in which the patient's death was evidently retarded.

I cannot but think that the operation is only likely to be attended with success in the more acute diseases of the larynx, and is not at all advisable in cases of ulceration. It is allowed on all hands, that the effects of diseases of the larynx "are in themselves fatal after a certain time, even if the original obstruction be obviated:" hence the operation "is ineffectual, unless performed early."† There are very few cases of ulceration in which the operation is likely to be proposed till the disease has existed so long that these fatal effects have probably supervened; and I am inclined to think that all those who would get well after the operation, might be cured without it. Of the two last cases mentioned by Mr. Lawrence, the first appears to me to have been evidently one of inflammation; the last was one of ulcerated larynx, mentioned also by Mr. Bell, who performed the operation: the former succeeded, the latter failed.

Mr. Lawrence remarks, "The different results of Donovan's case, (the ulcerated larynx,) particularly after the favourable appearances exhibited in some parts of its progress, leads us to reflect on the causes of such a difference. Although the operation was longer delayed in the latter instance, and the artificial opening less free, yet the death of the patient must, I think, be ascribed to an original difference in the nature of her affections: a difference which, for the reasons so well pointed out by Dr. Latham, cannot be recognised by the symptoms. We have already seen that different affections are discovered, after death, in patients whose symptoms, derived from the interruption of the respiratory and vocal symptoms, which is common to them all, exhibited no diagnostic differences; that in some there was a mere thickening and change of structure in the membrane, while in others the cartilages were diseased. We may be allowed to conjecture that Jones's disease was of the former kind; while we know, from dissection, that Donovan's was of the latter."‡ It appears, from these remarks, that Mr. Lawrence would not advise the operation of bronchotomy where the cartilages of the larynx are diseased. It has been my endeavour, in this paper, to point out the diagnostic characters by which

* Medico-Chirurgical Transactions, vol. vi. p. 240, 241, *et seq.* and 250

† Ib. p. 248. ‡ Ib. p. 262.

this may be known: with what success I have done this, it is not for me to determine.

It would be useless to enlarge upon the more advanced stages of this disease, as, probably, such affections are, in the present state of our knowledge, wholly incurable.

St. George's Hospital, December, 1822.

Selected Reviews.

The Study of Medicine. By John Mason Good, M.D. F.RS.

(From the Medico-Chirurgical Review for June, 1823.)

Continued from page 448.

The next subject which presents itself in the second volume, is the 4th order of the 3d class, Hæmatica, entitled Dysthetica, or Cachexies—a morbid state of the blood or blood-vessels, alone, or connected with a morbid state of the fluids. This order is divided into 9 genera, viz. Plethora, Hæmorrhagia, Marasmus, Struma, Carcinus (cancer), Lues, Elephantiasis, Bucnemia (tumid leg), Catacausis (spontaneous combustion), Porphyra (scurvy), Exangia (vascular divarication), Gangrena, Ulcus.

This is a pretty plentiful bill of fare, and may well furnish food for reflection.

Our author justly wonders that plethora is so seldom ranked as a disease, and so seldom treated of in a course of medical instruction. Assuredly it is a phenomenon that very frequently crosses our path in practice—perhaps more frequently than almost any other. Dr. Good properly enough divides plethora into two kinds—sanguineous and serous—the first more common to men, the second to women—the first characterized by a full, strong, rebounding pulse, firm and vigorous muscular fibres—the second by full, but frequent and feeble pulse, languid vital actions, smooth and soft skin, plump but inexpressive figure. In the sanguineous plethora, slight excitements produce congestions in the larger vessels or organs. The head feels heavy—the sleep is disturbed—the respiration is laborious. If fever arise it will assume the inflammatory type, and slight excesses endanger apoplexy. The treatment of this species is well known—abstinence and depletion.

In the serous plethora there is little vigour or activity of any kind, and whatever is eliminated is suffered to accumulate;—hence costiveness is a common symptom—the ankles are cold and œdematous—fat accumulates in the cellular membrane—

there is inertness of mind as well as body—every exertion is a fatigue, and the countenance though plump is without expression. The following are our author's therapeutics in this species of plethora. It is defective in eccoprotics and alterative aperients, which open the secretions and relieve the plethora. In other respects the advice is judicious.

"In this species, as in the last, we are compelled to begin with cupping or the use of the lancet. But, though the distended and overflowing vessels demand an abstraction of blood, it should never be forgotten that the relief hereby afforded is only temporary; and that, as the disease is, in this case, an effect of debility, we are directly adding to the cause as often as we have recourse to the lancet. Our leading object should be to give tone to the relaxed fibres; and to take off the morbid tendency to the production of a surplus of blood by counteracting the irritability which gives rise to it. Our attack must be made upon the entire habit, which as far as possible should undergo a total change. The diet should be nutritious, but perfectly simple, and the meals less frequent or less abundant than usual; the sedentary life should give way to exercise, at first easy and gentle, but by degrees more active, and of longer extent or duration. Tonics, as bitters, astringents and sea-bathing, may now be employed with advantage; and the muscular fibres will become firmer as the cellular substance loses its bulk.

"The whole, however, must be the work of time; for although in morals it is a wholesome principle that bad habits cannot too speedily be thrown off, it is a mischievous doctrine in medicine. Health being the middle term between excess and deficiency, every day is giving us a proof that where either of these extremes has become habitual, the system can only be let up or let down by slow degrees so as to reach and rest at the middle point with certainty, and without inconvenience. Professor Monro has furnished us with several very striking examples of this fact; and particularly among those who had acquired a habit of drinking very large quantities of spirituous potation. A man of this description who had broken both bones of one leg, and was put, for a more speedy recovery, upon a diet of milk and water and water-gruel, was hereby thrown into a low fever with an intermitting pulse, twitching tendons, and delirium; during which he got out of bed and kicked away the box in which his leg was confined. A by-stander and friend of the patient's of the same irregular habit, ventured to tell the professor that he would certainly kill him if he did not allow him ale and brandy: since, for several years antecedently, he had been accustomed to both these as his common drink; a little of each was, in consequence, permitted him; but the patient's friends did not tie him down to this little; for extending the grant of an inch to an ell, they instantly gave the man a Scott's quart of ale and a gill of brandy, which was his usual allowance for the evening; he slept well and sound; the next morning was free from delirium and fever; and, by a perseverance in the same regimen, obtained a speedy cure without the least accident." 685.

Hæmorrhage is divided, as usual, into entonic and atonic, or active and passive; and some interesting remarks are made by our author on the vacillations of balance in the circulation at different periods of our existence.

In the article hæmoptysis, no notice is taken of the pathological state of the lungs, nor are the interesting researches of Lænnec, or indeed of any of the recent pathologists at all adverted to. After premising venesection, the following is the methodus medendi recommended by Dr. Good.

"In general, however, we shall find it as successful and far less distressing to employ mild aperients and sedatives. The first, and particularly neutral salts, are alone of great benefit, and their action should be steadily maintained. Sedatives are of still higher importance, and especially those that reduce the tone of the circulation, as nitre and digitalis. The first, in about ten grains to a dose, should be given in iced water, and swallowed while dissolving; the dose being repeated every hour or two according to the urgency of the case. If there be much cough, it must be allayed by opium and blisters. Local astringents we cannot use, and general astringents are here manifestly counter-indicated, however useful in passive hæmorrhage; though it should be recollected, that when an active hæmorrhage from the lungs is profuse and obstinate, the vessels lose their tone and fall into a passive state." 697.

We observe that the superacetate of lead, one of the most powerful medicines we possess in restraining active as well as passive hæmorrhage from the lungs, is not alluded to by our author, except in the atonic species. We can positively assert that in all hæmorrhages from the lungs, the superacetate is a valuable medicine, in conjunction with opium, and after venesection (in the active species) has checked the vascular tumult. Our author has properly brought forward the testimonies of Dr. Reynolds and Dr. Latham to the good effects of the remedy in question.

While treating of marasmus, our author very judiciously introduces an abstract of Sir Henry Halford's interesting description of the "climacteric disease," published originally in the College Transactions, and now well known to the profession. Dr. Good has also introduced a case in illustration from his own practice, that of the late Mr. Cobb, secretary to the East India Company. But we are sorry to see the manner of relating this case. Of what interest is it to the pathologist or physician to be told, in a systematic work on medicine, of Mr. Cobb's "*extensive connexion and correspondence with the most brilliant and distinguished characters of the age that have figured either in political or fashionable life?*" What has the practitioner to do with Mr. Cobb's "fine taste and commanding talents?" Or, finally, what has science to do with a knowledge of

the fact that—"His Royal Highness the Duke of Sussex was kind enough to accommodate our patient with the use of his easy and convenient sofa-carriage, for as long a period as he might choose?" We are astonished that a man of Dr. Good's taste and judgment would condescend to record such pompous inanities, or waste his own and his readers' time with things so much beneath the dignity of science.

On pulmonary consumption we did not expect that our author could throw any light—but we expected that Dr. Good would have brought down his information to the date of publication. This, however, he has not done—at least in an equable manner. Of the researches, for instance, of Laennec and Baron, he takes no notice, while the anti-phthisical "hurricane at Barbadoes," described by Sir Gilbert Blane, (though published long after Laennec and Baron,) and the "low vales of his own country," recommended in consumption by Mansford, are carefully placed before the reader's eye. This is passing strange!

On struma, cancer, and syphilis, we need not dwell. It is not a little remarkable that in a systematic view of the venereal disease, at the present day, no notice should be taken of the important investigations so long pursued by our army brethren in particular, respecting the possibility of curing the complaint without mercury. The following is the only passage that seems to have any reference to the subject. "Dr. J. Thomson, of the Depôt Hospital, Edinburgh Castle, has been so highly satisfied with its (sarsaparilla) antisyphilitic powers, that he has for some years relinquished the use of mercury altogether in favour of a new mode of practice which consists chiefly in the employment of sarsaparilla." In recompense for this unaccountable omission of one of the most interesting facts of the present century, Dr. Good enumerates the anti-venereal properties of the flammula jovis, the clematis recta, the lobilia syphilitica, and some other antiquated remedies!

On the subject of elephantiasis, our author is quite at home; as it has enabled him to tread the mazes of the Hebrew, Arabic, Egyptian, and Grecian languages, and, according to Dr. Bateman, "to disperse some of the thick mist in which the translators have enveloped them." As far as our own dull optics are concerned, this *mist* of antiquity seems still as thick as that which Ossian so often describes on the "Mountains of Morven." If these erudite researches respecting the *name* of the disease threw any light on its nature or treatment, we should be among the first to fall down and worship their author. But as "fine words butter no parsnips," neither will Hebrew characters disperse leprous tubercles—and therefore we are just where we started in the midst of learned lore.

In the article "scurvy," our author accumulates most of the knowledge that has been acquired respecting the disease by our forefathers, predecessors, and a few of our cotemporaries. He does not seem to be sufficiently acquainted with a fact established by our naval medical brethren, and particularly Mr. Bampfield, that the want of fresh *animal food* is as much the cause of scurvy as the want of vegetables—and also that fresh animal food will cure the disease as quickly and effectually as fresh fruits and acids. We understand that genuine scurvy has lately been pretty generally produced in the Penitentiary establishment at Milbank, by an experiment of feeding its inhabitants almost entirely on vegetables and the farinaceæ. It is probable, however, that in this instance, the low and damp situation of the building, the incarcerated condition of its inmates, and the gloomy depressing passions inseparable from such a life, must have materially contributed, with the banyan fare, to the production of scurvy, hemeralopia, &c. with which the inhabitants have been scourged.

In the remaining species of this order, we see nothing to find fault with, and the author has evinced his usual industry, erudition, and judgment in the compilation.

The third volume opens with the fourth class—Neurotica, embracing four orders, viz. 1st order, Phrenica affecting the intellect—Osthetica, the sensation—Cinetica, the muscles—Systatica, affecting several or all of the sensorial powers. The physiological proem to this class, as might have been expected, requires and occupies a considerable space—54 pages of letter-press, and does great credit to the ingenious author. The three principal heads of this proem are—1st, The general nature of the brain, its ramifications, and substitutes—2d. The principle of sensation and motion—3d. The intellectual principle.

In touching on the last and most intricate subject of the three, Dr. Good has wisely confessed the ignorance under which we labour, and properly recommended to us investigations more suited to our limited capacities.

"Of the nature of the mind or soul itself, we know little beyond what REVELATION has informed us: we have no chemical test that can reach its essence; no glasses that can trace its mode of union with the brain; no analogies that can illustrate the rapidity of its movements. And hence the darkness that, in this respect, hung over the speculations of the Indian gymnosophists and the philosophers of Greece continues without abatement, and has equally resisted the labours of modern metaphysicians and physiologists. That the mind is an intelligent principle we know from nature; and that it is a principle endowed with immortality, and capable of existing after death in a state separate from the body, to which, however, it is hereafter to be reunited at a period when that which is now mortal shall

put on immortality, and death itself be swallowed up in victory—we learn from the God of nature. And with such information we may well rest satisfied: and, with suitable modesty, direct our investigations to those lower branches of this mysterious subject that lie within the grasp of our reason." 33.

Our author cannot, however, drop this subject without observing that the discussion concerning the particular entity of the mind, seems to have been conducted with an undue degree of heat and confidence on all sides, considering our ignorance of the subject.

"Is the essence of the mind, soul, or spirit, material or immaterial? The question, at first sight, appears to be of the utmost importance and gravity; and to involve nothing less than a belief or disbelief, not indeed in its divine origin, but in its divine similitude and immortality. Yet I may venture to affirm, that there is no question which has been productive of so little satisfaction, or has laid a foundation for wider and wilder errors within the whole range of metaphysics. And for this plain and obvious reason, that we have no distinct ideas of the terms, and no settled premises to build upon. Corruptibility and incorruptibility, intelligent and unintelligent, organized and inorganic, are terms that convey distinct meanings to the mind, and impart modes of being that are within the scope of our comprehension. But materiality and immateriality are equally beyond our reach. Of the essence of matter we know nothing, and altogether as little of many of its more active qualities: insomuch that, amidst all the discoveries of the day, it still remains a controvertible position, whether light, heat, magnetism, and electricity are material substances, material properties, or things superadded to matter, and of a higher nature.

"If they be matter, gravity and ponderability are not essential properties of matter, though commonly so regarded. And if they be things superadded to matter, they are necessarily immaterial, and we cannot open our eyes without beholding innumerable proofs of material and immaterial bodies co-existing and acting in harmonious union through the entire frame of nature. But if we know nothing of the essence, and but little of the qualities of matter, of that common substrate which is diffused around us in every direction, and constitutes the whole of the visible world, what can we know of what is immaterial? of the full meaning of a term that, in its strictest sense, comprehends all the rest of the immense fabric of actual and possible being; and includes, in its vast circumference, every essence and mode of essence of every other being, as well below as above the order of matter, and even that of the Deity himself?

"Shall we take the quality of extension as the line of separation between what is material and what is immaterial? This, indeed, is the general and favourite distinction brought forward in the present day; but it is a distinction founded on mere conjecture, and which will by no means stand the test of inquiry. Is space extended? every one admits it to be so. But is space material? is it body of

any kind? Des Cartes, indeed, contended that it is body, and a material body; for he denied a vacuum, and asserted space to be a part of matter itself: but it is probable that there is not a single espouser of this opinion in the present day. If then extension belong equally to matter and to space, it cannot be contemplated as the peculiar and exclusive property of the former; and if we allow it to immaterial space, there is no reason why we should not allow it to immaterial spirit. If extension appertain not to the mind or thinking principle, the latter can have NO PLACE of existence; it can exist NO WHERE; for WHERE OR PLACE is an idea that cannot be separated from the idea of extension. And hence, the metaphysical immaterialists of modern time freely admit that the mind has NO PLACE of existence; that it does exist NO WHERE; while, at the same time, they are compelled to allow that the immaterial Creator, or universal Spirit, exists EVERY WHERE, substantially as well as virtually." 35.

Such are the difficulties in which our ingenious author has involved the immaterialists. But it is not to be supposed that these difficulties are to be removed by adding to matter the quality of solidity in conjunction with that of extension. We shall not, however, follow our author through this maze, but give his own creed in his own words—a creed, we think, as rational as any that can be offered for our acceptance in the present condition of our knowledge.

"Let not the author, however, be misunderstood upon this abstruse and difficult subject. That the mind has a DISTINCT NATURE and is a DISTINCT REALITY from the body; that it is gifted with immortality, endowed with reasoning faculties, and capacified for a state of separate existence after the death of the corporeal frame to which it is attached, are, in his opinion, propositions most clearly deducible from revelation, and, in one or two points, adumbrated by a few shadowy glimpses of nature. And that it may be a substance strictly IMMATERIAL and ESSENTIALLY DIFFERENT from matter, is both possible and probable; and will hereafter, perhaps, when faith is turned into vision, and conjecture into fact, be found to be the true and genuine doctrine upon the subject. But till this glorious era arrives; or till, antecedently to it, it be proved, which it does not hitherto seem to have been, that matter, itself of divine origin, gifted even at present, under certain modifications, with instinct and sensation, and destined to become immortal hereafter, is physically incapable, under some still more refined, exalted, and spiritualized modification, of exhibiting the attributes of the soul, of being, under such a constitution endowed with immortality from the first, and capacified for existing separately from the external and grosser frame of the body; and that it is beyond the power of its own Creator to render it intelligent, or to give it even brutal perception, the argument must be loose and inconclusive: it may plunge us, as it has plunged thousands before, into errors, but can never conduct us to demonstration. It

may lead us, on the one hand, to the proud Brahminical and Platonic belief, that the essence of the soul is the very essence of the Deity, and consequently a part of the Deity himself: or, on the other, to the gloomy regions of modern materialism, and to the cheerless doctrine that it dies and dissolves in one common grave with the body." 87.

But we must take leave of this subject, and of the proem altogether, to which we cannot do justice in a review.

The first order, (Phrenica, or diseases affecting the intellect,) is divided into six genera, viz. Insanity, Ungovernable Passion, Illusion, Revery, Sleep-disturbance, Fatuity. These are subdivided into species and varieties almost innumerable—in short, we should have imagined that the invention of so many names and distinctions would have required or produced phrenzy itself! Nevertheless, we freely confess that Dr. Good has accumulated on the subject of mental and nervous maladies an immense fund of curious and important information from the best sources, and which we can safely recommend to the careful perusal of the student in medical science.

Of the great variety of subjects treated of in the class Neurotica, our limits and plan will only permit us to take some slight notice of one or two.

The species HYPOCHONDRIAS is neatly, though succinctly treated of by our author. The publication of M. Falret has brought the subject more before the public, of late, than many other diseases of greater importance. Assuredly, it is one which is equally distressing to patient and physician—for the former seldom acknowledges that he derives any benefit from the latter.

As early as the time of Diocles hypochondriacism was considered as a disease of the stomach, and notwithstanding the arguments of Falret, Georget, and some late writers, it does not seem to be yet satisfactorily settled whether it should be regarded as a cerebral or abdominal malady. For our own parts, we believe that in most cases there is functional disorder both of the brain and chylopoietic organs. It is not easy to distinguish hypochondriasis from melancholia, since, in fact, they often change into one another. Sir Alexander Crichton, however, lays down the following distinction:—"In those whose health is much deranged true melancholy seldom arises, except mental causes of grief and distress join themselves to the corporeal ones: and this constitutes one of the characters which distinguish melancholia *vera* from hypochondriasis. The *former* may be said to be always excited by mental causes, and consists in various phenomena of grief, despondency, and despair; whereas, the *latter* most commonly arises from corporeal

causes, and its mental phenomena consist of erroneous ideas entertained about the patient's own make or body."*

"The corporeal causes," says Dr. Good, "are usually a diseased emotion of one or more of the digestive organs, and especially, as we shall presently have to observe, a displacement of some part of the colon. It is also not unfrequently a result of the sudden cessation of some periodical or other habitual discharge, as that of an issue, or of a hemorrhoidal flux, a chronic ulcer, or some external eruption.

"The melancholy man seldom lives long, and his disorder often commences in the meridian of life. He frequently terminates his days by violence, or at the utmost never attains old age. The hypochondriac seldom becomes affected till after the meridian of life, and very generally continues to the stage of longevity." 146.

The common corporeal symptoms of hypochondriasis are a troublesome flatulence in the stomach or bowels—acrid eructations—costiveness—copious discharge of pale urine—spasmodic pains in various parts of the body—giddiness—dimness of sight—palpitations—sleeplessness—utter inability of fixing the attention upon any subject of importance, or of engaging in any thing that demands vigour or courage. The mental feelings and peculiar trains of ideas that haunt the imagination and overwhelm the judgment, exhibit an infinite diversity, and lay a foundation, Dr. Good thinks, for the three following diversities, viz. vapours—weariness of life—misanthropy, or spleen.

In the first variety the patient is tormented with a visionary or exaggerated sense of pains or some concealed disease—a whimsical dislike of particular times or places, or things—or groundless apprehensions of personal danger or poverty. Strange and manifold are the illusions under which men of otherwise excellent understandings have laboured in this respect. Greding gives us an account of a medical gentleman who laboured under an impression that his stomach contained frogs, which had been successively spawning ever since he had bathed in a pool where some tadpoles had been swimming. He spent his time in trying to expel this imaginary evil, and had travelled to many places to consult eminent physicians. It was in vain to attempt to convince him that the gurglings or borborigmi he heard were from extricated wind in the stomach or bowels.

"I have, at this moment," says Dr. Good, "under my care, a hypochondriac of about fifty years of age, who affords a sufficient proof that Moliere drew his Malade Imaginaire from nature, and hardly added an exaggerating touch. His profession is that of the law; his life has been uniformly regular, but far too sedentary and studious;

* On Mental Derangement, vol. iii. p. 325.

without having any one clearly marked corporeal affection, he is constantly dreading every disease in the bills of mortality, and complaining, one after another, of every organ in his body; to each of which he points in succession as its seat; especially the head, the heart, and the testes. He now suspects he is going to have a cataract, and now frightens himself with an apprehension of an involuntary seminal emission. It is rarely that I have left him half an hour, but I have a note to inform me of some symptom he had forgotten to mention, and I have often five or six of these in the course of the day. The last was to state, that shortly after my visit he had had a discharge of three drops of blood from the nose—a change which he thought of great importance, and requiring immediate attention. His imaginary symptoms, however, soon disappear, provided they are listened to with gravity, and pretended to be prescribed for; but not otherwise. Yet in disappearing they only yield to others, that can only be surmounted in like manner. His head is too much confused to allow him to engage in any serious study, even if it were prudent to recommend it to him: but on all common subjects he is perfectly clear, and will converse with shrewdness and a considerable extent of knowledge. His bowels are sluggish; his appetite not good, though he eats sufficiently; his sleep is unquiet, but he has enough of it without opiates; his pulse is variable, sometimes hurrying on abruptly, and without any obvious cause, to a hundred strokes in a minute, but often very little quicker than in a state of health. His tongue varies equally, and is irregularly clean, milky, and brownish, and then suddenly clean again. He is irritable in his temper, though he labours to be calm; and is so rooted to his chamber, that it is difficult to drag him from it. He has now been ill about ten weeks, but it is during the winter, and the season is too severe and inclement for him to venture abroad. I look forward to his restoration in the spring from exercise, change of air, and a course of tonic medicines." 148.

It is a melancholy reflection that the wisest and best of mankind are as open to this affliction as the weakest—perhaps more so! Pascal himself was, at one time, so hallucinated with hypochondriacism as to believe that he was always on the verge of an abyss into which he was in danger of falling. Under the influence of this terror he would never sit down till a chair was placed on that side of him on which he thought he saw it, thus proving the floor to be substantial.

The second variety, weariness of life, ending often in suicide, we have sufficiently discussed in another part of this Journal.

Our author appears to think that in many cases of hypochondriacism there is a displacement of the colon, whether as cause or effect.

"Post-obit examinations have also frequently pointed out another local cause which otherwise we should little expect: and that is

a displacement of the transverse colon. M. Pinel, as we have already observed, regards this as a very common cause of insanity in all its forms: but there can be no question that it is a powerful and ready cause of the present species of mental alienation. M. Esquirol, who has found it as frequently as M. Pinel, tells us that this displacement sometimes consists in an oblique, and sometimes in a perpendicular direction of the intestine, so that its sinister extremity lies behind the pubes; whilst it has sometimes descended into the form of an inverted aorta, even below the pubes and into the pelvis. No disease of the organization has been found in any instance, and hence the change of place must proceed from relaxation and debility alone, where the misposition is not connate; on which account it may, in some instances, be an effect, as it is certainly a cause in others. It is under these circumstances that we chiefly meet with that pain in the epigastrium to which we have already adverted, and which gives the feeling of a tight cord surrounding the body in the line of distress; and when such a symptom, therefore, occurs, we have reason to suspect the cause of the disease to be produced by some derangement of the colon, in respect to position. Under the operation of such a cause the art of medicine can do but little: temporary ease, however, may be obtained by the pressure of a belt broad enough to support the whole of the lower belly; and it is possible that the intestine may gradually right itself under a course of the warmer tonics, as columbo, canella alba and cassummuniar, or lose its morbid irritability by habit. But these are rare terminations; for more generally the displacement increases, and the disease itself gains ground and becomes more incurable." 153.

Congestion in one or more of the abdominal organs are a frequent result of this complaint—nor seldom a primary cause. Hence we find that hæmorrhoidal discharges are often serviceable, and, on the same principle, that leeches to the anus afford much relief.

We have said that Georget, Falret, and some others (among whom indeed we may reckon Cullen himself) considers the brain as the seat of hypochondriacism, and conceive that the disorder of any other organ can seldom be regarded even as its remote cause. M. Falret,* who is the great modern champion of this doctrine, appeals to the phenomena and symptoms of the disease for proofs of its correctness. Hypochondriacs, says he, often complain of pain in the eyes, which organs appear occasionally to be larger during the paroxysms—they have some degree of intolerantia lucis—the arteries going to the head throb—the sense of hearing is acute, as are those of smelling, taste, and often of feeling—there is a predominant want of sleep—and when sleep occurs it is disturbed with frightful

* See the excellent analysis of Falret's work on Hypochondriasis, in our respected cotemporaries, the Medical and Physical Journal, Medical Repository, and the 17th number of the Quarterly Journal of Foreign Medicine.

dreams. The intellect, at the beginning of the disease, is more acute than natural, but afterwards becomes confused. These, and many other symptoms which we have not thought it necessary to enumerate here, are looked upon by our author as indications that the sensorium is the seat of the disease.

The next order of symptoms M. Falret considers as sympathetic, though commonly looked upon by physicians as primary ones. These are, depravation of digestion, gastric acidity—often an inordinate flow of saliva from the mouth—sense of tightness in the region of the stomach and in the hypochondria—nausea, and sometimes vomiting of blackish matters—constipation of diarrhœa—borborygmi—great flow of pale urine, &c. &c. These and many other anomalous symptoms will often continue for years, without any great loss of flesh, and without the friends or physician attaching much importance to what are considered imaginary complaints. But at length the patient begins to lose flesh and colour—he has palpitations of the heart, and, occasionally, intermissions of the pulse, and other more evident symptoms of actual disease.

In respect to *post mortem* examinations, M. Falret has not been very successful in establishing his doctrine. Lesions have been found in all parts of the body, and in none exclusively. Indeed, it is evident that Falret endeavours to establish his position rather by physiological and pathological reasoning than by anatomical demonstration.

In regard to treatment, M. Falret advises, and perhaps properly, that not much medicine is to be given. He seems to depend chiefly on moral management, as that which goes most directly to relieve the suffering sensorium. He recommends leeches to be occasionally applied behind the ears, and cold applications to the head; at the same time, prescribing (what is rarely obtained) exercise, amusements, cheerful company, change of occupation and scene, &c. With respect to the sympathetic disorders, he says laconically, "*sublata causa, tollitur effectus.*" But this is fallacious; for when hypochondriasis does actually originate in sensorial disorder, the abdominal or other sympathetic affections that take place subsequently require to be particularly attended to, as they keep up the primary complaint.

Returning to Dr. Good, we observe that he considers opium as a very doubtful medicine in hypochondriasis, though strongly recommended by several respectable writers, and gladly resorted to by the unhappy patients themselves. Dr. Cullen was decidedly averse to it, and we have found, that where the bowels are obstipated, opium is injurious. At the same time, as sleeplessness is a common feature of the disease, we have often exhibited an anodyne at bed-time, in conjunction with an

aperient or diaphoretic, without any injurious consequences, and with great solace to the patient.

Passing over a great many genera and species of mental and nervous affections, we come to NEURALGIA, of which our author has exhibited an imperfect history, as far, at least, as respects our own times. For example, neither the belladonna, nor the carbonate of iron are introduced into the methodus medendi, while some pages are taken up with the operation of cutting the nerve—a remedy which is now hardly ever resorted to—at least with success. Under the second species of this disease, neuralgia pedis, we have the following case.

"In calling, as I believe for the first time, the attention of the medical profession to this species, by introducing it into the volume of Nosology before the presentation of M. Chausser's book to the world, I had my eye directed to a very marked case which had then lately occurred to me in a clergyman of this metropolis, about forty-five years of age, but otherwise in firm health and cheerful spirits. He had for many years been a victim to it. The paroxysms were short, and of uncertain recurrence, but so acute as nearly to make him faint, and at length compelled him to relinquish the duties of the pulpit, for which from his zeal and eloquence he was admirably qualified, but where he had frequently been obliged to break off with great abruptness from the unexpected incursion of a fresh paroxysm. The pain usually extended up the calf of the leg towards the knee, and ramified towards the toes in an opposite direction, and was usually compared by himself to that of scalding verjuice poured over a naked wound. The tibial branches of the popliteal nerve, and particularly the plantar twigs, seem in this species to have been the part chiefly affected, though it is probable that some of the offsets from the peroneal branch associate in some instance in the morbid action.

"Every therapeutic process that the art of medicine in the hands of the most experienced physicians of this metropolis could devise, was in this case tried in a long and tedious succession in vain. Sometimes external and sometimes internal preparations, or a tight ligature, appeared to afford a temporary alleviation, and to protract the intervals: but never any thing more. It was in consequence proposed by a surgeon of great eminence to amputate the leg, which was at one time on the point of being submitted to, though protested against by the present author, on two accounts. First, the uncertainty whether the morbid condition of the nerve might not be seated chiefly in the origin instead of in the extremity of the nerve; in which case, amputation could be of no avail; and secondly, the chance that in process of time the keen sensibility of the affected branches would be worn out and obtunded by the violence of the action. Such was the undecided and miserable condition of the patient at the time of noticing his case on the publication of the author's volume of Nosology. Since this period, the prediction that the disease would gradually wear itself out, has been completed: the paroxysms are now slight and tolerable, and the intervals much longer; and the

patient has for nearly a twelvemonth been able to resume the duties of his profession without any interruption." 296.

We think with our author that it would have been very wrong to have proceeded to amputation in the above case, as we have no doubt that the disease would have returned after the operation as bad as ever. Our improved pathology of the disease, now leads to look on neuralgia as a general rather than a local disorder, and consequently more success has been derived from constitutional than topical treatment. Our author has introduced a third species—neuralgia mamæ—but in fact, there is no part of the body which is not liable to the disease, and therefore the species might be multiplied ad infinitum. The following case, however, is interesting.

"It is about two years ago that I was requested by an eminent surgeon of this metropolis in dispensary practice, to examine a young woman, then eighteen years of age, who, for more than two years had been subject to a painful disorder of the breast, that seemed equally to defy all parallel and all mode of treatment. On examining into the nature of the symptoms, I found them as described in the preceding definition. The organ was full formed, soft, and globular, without the slightest degree of inflammation, or hardness. When the paroxysm of pain was not present, it would bear pressure without inconvenience, but, during the pain, the whole breast was acutely sensible. The paroxysms returned at first five or six times in the course of the day, and were short and transient: but as the disease became more fixed, it became also more severe and extensive: for the agonizing fits at length recurred as often as once an hour, and sometimes more frequently: and from being comparatively concentrated, the lancinating shoots darted both downward in the course of the circumjacent ribs, and upwards to the axilla, whence they afterwards descended to the elbow, below which I do not know that they proceeded at any time. These fits were at length so frequent and vehement as to embitter her whole life, and incapacitate her from pursuing any employment, for it frequently happened that, if she attempted needle-work, her fingers abruptly dropped the needle a few minutes after taking hold of it, from a mixture of pungent pain and tremulous twitching. The twitching or snatches in the shoulder, for it at length reached to this height, were at one time so considerable as to give the patient an idea, to use her own words, that something was alive there; while, though the lancinating pain did not descend below the elbow, a considerable degree of trepidation reached occasionally to her fingers' ends. Her general health was in the mean time unaffected, and she was regular in menstruation.

"I had no hesitation in regarding this a non-descript species of neuralgia; and as little in communicating my fears that no plan of medicine we could lay down would be more than palliative, even if it should prove thus far beneficial, and that we must trust to time alone for a cure, and that obtuseness of sensibility which I have al-

ready noticed as a common consequence of high nervous irritation, continued till the organ becomes exhausted and torpefied.

"Every remedial process was, nevertheless, tried in succession for the purpose of obtaining relief, if not full success. Bleeding, local and general, frequently and profusely repeated; purgatives of all kinds; tonics and antispasmodics of all kinds; the hot and cold bath; electricity and galvanism in every form; rubefacients, blisters, setons, issues, and whatever else could be suggested, were enlisted into service in succession. But every thing was equally without avail: nor do I know that even a temporary relief was obtained by any of these. Narcotics of all kinds proved impotent: drowsiness, indeed, and a comatose stupor were hereby in various instances obtained, but the interval of wakefulness was as much as ever tormented with the same racking paroxysms. From the powerful influence of nux vomica in many cases of nervous affection, to some of which we shall have occasion to advert hereafter, I had some hope of producing a slight impression on the nerves affected: but the hope proved illusory: she took it in infusion as far as to about eight grains at a dose, three or four times a day, till her head was intolerably confused, and every other part became numb, but the paroxysms were intractable." 299.

The poor sufferer tried one dispensary after another, and from each was discharged as incurable. At length she began to improve without any other medicine than a seton under the breast.

This fourth class of nervous affections affords us no scope for reflection or matter for extraction. The subjects are pretty fairly handled, but present little above or below par for commentary. Among the numerous species of functional disorders of the nervous system, our attention was arrested for a moment on one which is rarely treated of in systematic works, or indeed considered as a disease at all. This is disphoria simplex, or, in common language, "*fidgets.*" It is really a most disagreeable and troublesome complaint while it lasts, and often puzzled us to account for its origin and cause. The import of the term, as every one knows, is restlessness, unsteadiness, and perpetual change of place; and most languages have some peculiar word to express this annoying and irritable sensation.

"The actual cause," says Dr. Good, "seems to consist in an undue accumulation of sensorial power, which seeks an outlet, so to speak, at every pore, for want of a proper channel of expenditure. Thus every one becomes fidgety who is obliged to sit motionless beneath a long drawn and tedious story of common-place facts totally destitute of interest: and still more so when he is eagerly waiting, and fully bottled up, as it were, to reply to an argument loaded with sophisms, absurdities, or untruths, and over which he feels to have a complete mastery. So the high-mettled horse is fidgety that, called out, in full caparison, and still restrained in his career, is panting for the race or the battle. 'So the squirrel, when confined in a cage, feels,'

as Dr. Darwin has ingeniously observed on this disease which he calls jactitatio, 'a restless uneasiness from the accumulation of irritative power in his muscles, which were before in continual and violent exertion from his habit of life, and in this situation finds relief by perpetually jumping about his cage to expend a part of his redundant energy. For the same reason children that are constrained to sit in the same place at school for hours together, are liable to acquire a habit of playing with some of the muscles of their face, or hands, or feet, in irregular movements which are called tricks, to exhaust a part of the accumulated irritability by which they are goaded.'

"In the two last instances this irritability is simply accumulated for want of a proper outlet, and not from inordinate secretion. In the two preceding cases of the restrained horse and the restrained orator, there is added to this simple accumulation, for want of disbursement, an accumulation also from inordinate excitement." 467.

That the cause, in many cases, may be an undue accumulation of sensorial power, we are not inclined to deny; but we have found, in ourselves, that this fidgety state which usually assails us at night, is most certainly owing to something irritating the nerves of the primæ viæ, as cheese, pickles, or any kind of food that happens not to be digested properly in the stomach and duodenum. Green tea produces the same effect. To allay the nervous irritation thus induced, we have often been obliged to get out of bed, and walk the room for a quarter or half an hour, and that repeatedly in the same night.

The succeeding species, dysphoria anxietas—defined thus:—"the restlessness chiefly affecting the præcordia, with depression of spirits, and a perpetual desire of loco-motion," engaged our notice, as being a most disagreeable sensation, and better described or understood perhaps, by the simple term gloom or horrors. We mention it because we think it is very often produced by bile (particularly of a depraved quality) in the primæ viæ. We have known this gloom or despondency removed in a very few minutes by a discharge of bile; and we generally take measures to clear the primæ viæ whenever we feel these "blue devils" approach us.

The more important subjects comprehended in the remaining part of this 3d volume, are apoplexy and epilepsy, which have been very fully treated of in this journal, when reviewing certain monographs on those particular topics. It is therefore unnecessary for us to enter on them here, especially as they are not discussed on a very large scale, and comprehend only the more common matters of fact as yet ascertained respecting them.

The 4th volume is occupied with the 5th class, GENETICA, diseases of the sexual function. The first order, Cenetoca, af-

fecting the fluids; the 2d Orgastica, affecting the orgasm; the 3d, Carpotica, affecting the impregnation.

The physiological proem gives our learned and ingenious author an opportunity of illustrating his subject by a pretty general though succinct view of the mysterious process of procreation in the other tribes of animals besides man. But as the last volume embraces some interesting diseases of the genital organs, on which we mean to make some remarks, we shall construct a short article thereon for our next number.

Sir Astley Cooper *on Dislocations and Fractures of the Joints.**

(From the Quarterly Journal of Foreign Medicine and Surgery, for Jan. 1823.)

This work is a noble and splendid specimen of British Surgery; forming, we believe, the most perfect treatise upon dislocations and fractures of the joints, to be found in the English, or indeed in any other language. The author's extensive experience, both as an hospital surgeon and private practitioner, together with the good understanding which he has uniformly maintained with all his professional brethren, young as well as old, many of whom are proud to have been his pupils, have enabled him to bring forward a mass of details, which we think no surgeon can peruse without deep interest, or study without lasting improvement. To say that he has reasoned correctly from these materials, and laid down the most improved rules of treatment applicable to the particular cases, is but saying what the acknowledged powers of observation and reflection of the author should lead us to expect. A work like the present, ought to put to shame the numerous drones, upon whom the advantages of being appointed to public hospitals are thrown away; who are daily looking at disease in all its Protean forms, without advancing the profession one step; and who think they fulfil all their duties to the public, if they merely profit so much by these opportunities, as to be enabled to extend the sphere of their own private practice. Public institutions, for the benefit of the sick, are thus degraded in public estimation, by being considered in the mere light of ladders, by which practitioners may ascend to fortune. No surgeon or physician ought to be appointed to superintend the sick in hospitals, who is not both able and willing to become an *instructor;* for it is from the facilities which such situations afford for advancing the science of medi-

* A Treatise on Dislocations and Fractures of the Joints, by Sir Astley Cooper, Bart. F. R. S. Surgeon to the King, &c. One volume, Quarto, pp. 562, with 30 plates. Price 1*l.* 11s. 6d. London, October, 1822.

cine, that the public, the supporters of these institutions, is chiefly benefited. As to the patients admitted into hospitals, or persons of a rank in life likely to have recourse to the aid such institutions afford, it may be questioned whether more good or harm results to these individuals from having ease, good living, and medical treatment, with so little care or forethought on their own part, put within their reach. It is therefore by the appointment to hospitals of such men as our author, that the public at large, and the profession generally, are likely to profit. Sir Astley has performed all the duties of his situation, and performed them well and faithfully, but to say more would be but to flatter him; yet when we see so many surgeons attached to hospitals, too dull to profit by what they see, or too indolent to tell the world what they have learned, we are compelled to join in the deep gratitude which we are persuaded every honest surgeon who reads Sir Astley's book, must feel towards the author.

We would say a word respecting the more than paternal care and interest, with which our author regards the pupils of St. Thomas's and Guy's Hospitals, to whom the present volume is dedicated, but upon this subject, we dare hardly trust our feelings. Of the liberal spirit, however, in which the work has been presented to the public, we cannot speak in terms of sufficient praise. We have been told, on good authority, that the thirty splendid plates attached to the volume are equal in value to the price of the whole book. To those who have purchased his essays, which contain the groundwork of the present volume, he offers to print the additional matter in the octavo form for their use—a liberality, which those who make literature a trade, would do well to reflect upon.

An intimate knowledge of the structure and ligaments of the joints is absolutely necessary to enable any one to detect the nature of such accidents as may happen to these parts; for even with this knowledge it is often difficult, sometimes impracticable, when much swelling and effusion of blood supervene upon the injury. The effects of a dislocation, generally, are change of the form of the joint, alteration of the length of the limb, and loss of the power of motion in it; but this last does not take place till some time after the accident. In a very well marked case of dislocation of the femur into the foramen ovale, considerable mobility of the limb remained till three hours after the accident, when it became firmly fixed in its new situation by the permanent or *tonic* contraction of the muscles. Pressure of the displaced bone upon the muscles and nerves, produces obtuse pain, and frequently paralysis, especially of the arm, when the shoulder is dislocated. A case is mentioned of a man's life

being endangered by the end of his dislocated clavicle pressing upon his œsophagus.

Rotation of the limb is the best mode of discovering the nature of these accidents, because it rolls the head of the bone. The projections of bones are generally altered in their situations; thus, in dislocation of the hip, the trochanter cannot be felt, or but imperfectly, while in the elbow, the olecranon projects unusually, and indeed is our chief guide in detecting the accident. Some time after the accident, crepitus is felt within the joint from effusion of fibrin, and a thickened state of the synovia; and surgeons would do well to attend to this fact. Generally, however, there is not much subsequent inflammation, though sometimes it is severe, ending in abscess, or even the death of the patient. A man had dislocation of the hip upwards, which was reduced in due time, but increased swelling came on, with rigors, and in four days the patient died. The capsular ligament, and ligamentum teres were found entirely torn away, and a considerable quantity of pus, extravasated into the surrounding parts.

When the bone is not reduced, it forms for itself a new bed, and slight motion is gradually recovered, though if the lower extremity is dislocated, there is lameness ever after, and if the upper, the power of the limb is much diminished.

When cases of dislocation are examined after death, the bone is found completely removed from its socket; the capsular ligament torn to a great extent transversely, the peculiar ligaments are ruptured, though generally, the tendon of the biceps in dislocations of the os humeri remains untorn; the tendons also, which cover the ligaments, as that of the subscapularis, in dislocation in the axilla, are torn; and according to the extent of the laceration, so is the facility with which the accident recurs after reduction. Some of the muscles are also put upon the stretch even to laceration, as the pectineus and adductor brevis in dislocation of the thigh downwards, giving rise to effusion of large quantities of blood into the cellular membrane. These appearances do not depend solely upon the length of time which has elapsed from the accident, but also upon the kind of structure upon which the head of the dislocated bone is thrown; for if it be imbedded in muscle, the cartilage remains, and a new capsular ligament, formed by condensed cellular substance, surrounds the cartilage, but does not adhere to it. But if the dislocated bone rests upon another bone, or upon a thin muscle over it, the muscle is absorbed, and the two bones pressing upon one another, absorption is produced of the periosteum of the one and cartilage of the other; so that a smooth hollow is formed, around which an ossific deposit takes place from the periosteum, which is then irritated, but not absorbed, forming

a cup-like cavity, from which the bone cannot be displaced without fracture. Such are a few of the effects which our author describes as arising from dislocations produced by violence; but there are cases which occur from simple relaxation of the ligaments; from long and forcible extension of the muscles; and from paralysis. Interesting cases from each of these causes are detailed. One of them, a young gentleman, on board of an East India ship, for some trifling offence was suspended for an hour by the wrist, his foot barely touching a projection on the deck. On his return home, the bone could be easily thrown from its socket, but was as easily reduced, and the muscles had wasted as in paralysis. Ulceration sometimes produces dislocations, by destroying the ligaments, cartilage, and the cavities in which the bones are received. This is frequent in the hip joint, the head of the bone being also changed in size and figure by disease, and thrown upon the ilium, where it sometimes forms for itself a new socket. When there is organic lesion the dislocation is readily reduced, as was the case with a man who was admitted into Guy's Hospital, with the os femoris dislocated into the ischiatic notch, and in whom the intestinum jejunum was found ruptured.

A compound dislocation is when the articulating surfaces of the bone are not only displaced, but the cavity of the joint exposed. Inflammation of the torn membranes and synovial ligament speedily succeeds; granulations spring up from the synovial membrane; the cartilages ulcerate; the bone inflames; numerous abscesses form in different parts of the joint, and, at last, granulations spring from the ends of the bones deprived of their cartilages, which generally become ossified, and the joint is anchilosed, though sometimes they remain of a softer texture, and a slight degree of motion in the joint is gradually regained. During the whole of this process great irritation is kept up, and if the patient be of a feeble constitution, the limb must be amputated to preserve his life. It is the elbow, wrist, and ankle, which are most exposed to compound dislocation; the hip is hardly ever so dislocated, and the author has seen, in his extensive practice, only one instance in the shoulder and one in the knee.

The action of the muscles is the chief power which prevents dislocation, and it is only when the violence is applied in one direction, and the muscles acting in another, that the bones can at all be displaced. A horrible instance of this power in muscles, was shown in the execution of Damien, for an attempt to murder Lewis the XVth. Four young horses were fixed to his legs and arms, and urged to repeated efforts to dismember the criminal for the space of fifty minutes, but without success, nor did they succeed till the executioners had divided the muscles

and ligaments. In old people dislocations are rare, because the extremities of the bones in them are soft, and break, rather than suffer displacement. Persons of lax fibre, on the contrary, are exceedingly prone to this accident, from the little powers of resistance their muscles possess. In very young persons the bones give way at their epiphises rather than be dislocated. The dislocations of the hip, which we read of in children, arise from ulceration of the cartilages and bones. A child was brought to Sir Astley, with disease of the hip, for which one of those people called bone-setters had employed painful extension. Surgeons often mistake fracture of the condyles of the os humeri in children for dislocation, from the projection which such accidents produce at the back part of the joint.

The difficulty of reduction is very little owing to the form of the bones or the cavities in which they are received, or even to the capsular ligaments; but is more owing to the peculiar ligaments, of which the author has seen instances in the knee, when any of these ligaments remained untorn. The great difficulty, however, which is opposed to reduction, arises from the contraction of the muscles, and this difficulty is greater in proportion to the length of time which has elapsed since the accident. Besides the voluntary power of muscles, which cannot be exerted for an indefinite time, they possess what is called a *vis tonica*, by which, when an antagonist muscle is divided, they pull the parts towards their insertion, and retain them in a fixed situation. Thus if the biceps be divided, the triceps keeps the arm constantly extended; if the muscles of one side of the face are paralytic, the face is permanently drawn to the opposite side; there is no feeling of fatigue from this contraction of the muscles; for if a bone be dislocated, it is drawn as far from the joint as the parts will allow, and it is fixed there by the contraction of the muscles, even until their structure becomes changed. It is the resistance thus given by the muscles, together with their voluntary contraction, which the surgeon has chiefly to counteract. Immediately after the dislocation, the resistance of the muscles is easily overcome; but after a few days the difficulty is often great, and increases daily. In a case of fracture of the thigh bone, which was speedily fatal, the ends of the bones were found over-lapping, and the muscles had acquired so rigid a contraction, that even with considerable force, and in the dead body, the bones could not be reduced to their natural position. That it is the muscles which oppose reduction may be inferred from the fact, that when the dislocation is complicated, with injury to some vital organ, slight force restores the bone to its situation. When long unreduced, however, other obstacles arise; the bone contracts adhesions to the surrounding parts; the socket is filled with adhesive matter; and a new bony socket is sometimes

formed, from which, without fracture, the head of the bone cannot be displaced.

It is generally wrong, says the author, to employ mechanical force alone for the reduction of a dislocation, as it must often be employed in a degree to occasion great injury. Bleeding is considered as by far the most efficient auxiliary, the blood being drawn from a large orifice with the patient kept in the erect position; but attention is to be paid to the constitution of the patient, in regulating the activity of this practice. Dislocation may occur in individuals, from whom the extraction of blood in sufficient quantity might be injurious, and we are then to call in the aid of the warm-bath, heated to 100° or 110°; the patient to be kept in it till fainting comes on, when he is immediately to be placed in a chair, wrapped in a blanket, and the mechanical means employed. Antimony is recommended merely to keep up the state of syncope, already produced by the bath and bleeding. By these means the tone of the muscles is powerfully overcome, and dislocation reduced with much less effort, and at a period much more distant from the accident than can be effected in any other way.

One great cause of failure, in attempting reduction, arises from the bone not being properly fixed in which the socket is placed. Thus, if one person pulls at the scapula and two at the humerus, the scapula is drawn along with the humerus. The extension may be made either by assistants or by a compound pulley, the latter of which, says our author, ought to be preferred in all difficult cases, because the extension can then be gradually and regularly made, and not in the violent, sudden, and often ill directed manner in which it is done by assistants. We have seen dislocations reduced with facility by suspending a weight to the limb, a method strongly recommended by Mr. Abernethy, and which appears to be at least well calculated to overcome the voluntary contraction of the muscles. In all dislocations of the hip, the pullies, according to our author, ought constantly to be employed; and also in all cases of the shoulder, when the limb has been long out. We ought always to place the limb in such a position, between flexion and extension, as to relax all the stronger muscles. "Who has not seen," says our author, "in the attempt to reduce a compound fracture in the extended position of a limb, the bone, which could not be brought in apposition under the most violent efforts, quickly replaced by an intelligent surgeon, who immediately directed the limb to be bent, and the muscles to be placed in a comparative state of relaxation?"

It is generally best to apply the extension to the bone which is dislocated, although, in dislocations of the shoulder, the author places his heel in the axilla, and draws the arm by the

wrist, in a line with the body, by which the pectoral and latissimus dorsi muscles are relaxed. Boyer always prefers applying the extension to the limb below. After reduction by the pullies, we are told that the bone requires, for some time, to be kept in its situation by means of bandages. The limb ought to be preserved in a state of absolute rest till the ruptured ligaments are united. Pouring cold water upon the limb, and subsequent frictions are useful in restoring the tone of the over-stretched muscles. All attempts to reduce dislocations of long standing in robust people are hurtful, often unavailing; and, even when the bone is replaced, it is often rather an evil than a good, from the violence of the extension. Very good use of the arm is often recovered although the head of the bone remains in the axilla.

"I am of opinion that three months for the shoulder, and eight weeks for the hip, may be fixed as the period, from the accident, at which it would be imprudent to make the attempt at reduction, except in persons of extremely relaxed fibre, or such as are at an advanced age." The author is aware that dislocations have been reduced at four and even six months from the injury, but excepting in very emaciated, relaxed, and old people, the injury done in the extension is greater than the advantages derived by the reduction. After three months it is seldom that the use of the limb is increased after reduction. This ought to be fairly represented to the patient; and then only at his request ought the attempt to be made, and that gradually and without violence.

The THIGH BONE may be dislocated in four directions:—upwards upon the dorsum ilii; downwards into the foramen ovale; backwards and upwards into the ischiatic notch; forwards and upwards upon the body of the pubes. A dislocation downwards and backwards, as described by some surgeons, Sir Astley has never had an opportunity of observing; he therefore doubts if such dislocation ever occurs. In the dislocation upwards, which Sir Astley thinks occurs in twelve cases out of twenty of dislocations of the hip, the limb is shortened from one inch to two and a half inches; the great toe rests on the tarsus of the other foot; the knee and foot are turned inwards, the former being a little advanced upon the other knee; abduction of the limb is impracticable, but the limb can be slightly bent across the other; the head of the femur, if not concealed by extravasation of blood, may be felt moving on the dorsum of the ilium when the knee is rotated inwards; the trochanter is advanced towards the anterior superior spinous process, and is less prominent than in the opposite hip. In a severe and recent injury of the hip joint then, the surgeon looks for a difference in the length of the limb, a change of position inwards, diminution

of motion, and decreased projection of the trochanter. If the neck of the thigh bone is fractured the knee and foot *generally* are turned outwards; the trochanter is not drawn upwards but backwards; the thigh can be bent, though with slight pain, upon the abdomen; but what is chiefly to be attended to is that the limb, which is shortened from one to two inches, may be made of the length of the other by slight extension, and when the extension is abandoned the leg is directly shortened; when rotated, crepitus is felt in the extended but not in the contracted state of the limb. This last accident occurs rarely, except in old people, and generally from the most trifling cause. Compared with dislocation it is of very frequent occurrence.

The muscles which, more than others, resist the reduction of dislocation upwards, are, the glutei and triceps; the quadratus, gemini, and obturator internus, are put upon the stretch. Sir Astley's mode of reduction is as follows:—He takes from twelve to twenty ounces of blood, or more if the patient be a strong man, and then puts him in a bath heated to from 100° to 110°, and while there, gives him a grain of tartarized antimony every ten minutes, until nausea is produced. The patient is then placed upon his back on a table covered with a thick blanket; the pelvis is fixed by means of a strong girt passed between the thigh and scrotum, which is made fast to a staple in the direction in which the extension is to be made. To make extension a linen roller is applied tightly above the knee, a leather strap is buckled over it, and to each side of this the cord of the pullies is fastened. The knee is bent, but not to a right angle, and brought a little over the other thigh. The pullies are fastened to another strap in the direction in which the limb is now placed; the surgeon tightens them slowly till the patient complains, he then rests a little till the muscles relax; again he renews the extension, and again rests till he has drawn the head of the bone to the lip of the acetabulum; the pullies are now entrusted to an assistant, with directions to preserve the same degree of extension, and the surgeon rotates gently the knee and foot, during which the bone slips into its place, but generally without a snap, as the muscles have not sufficient tone remaining to act forcibly. The surgeon only knows that reduction is effected, by loosening the bandages and comparing the limbs. If the bandages get loose during the operation, no time should be lost in readjusting them, that the muscles may have time to recover as little of their tone as possible. It may be necessary, in some cases, to lift the bone over the lip of the acetabulum, by passing a towel under the limb and causing an assistant to raise it. Great care is necessary in removing the patient to bed.

Thirteen cases of dislocation of the hip upwards, are detailed; all exceedingly instructive. The first was unsuccessfully at-

tempted to be reduced without pullies; and the man, who is a labourer, was thus rendered incapable of earning his livelihood. There can be no doubt that the proper application of pullies would have reduced the limb. It is now nine years since the accident, and the patient cannot stoop without extreme difficulty: he was long compelled to use crutches, though he now manages to walk about with two sticks. This man was 62 years of age when the accident happened. In a case related by Mr. North, reduction was not attempted till nearly a month after the accident. The limb was shortened fully *three* inches. The pullies were employed, and before extension was begun two grains of tartar emetic were given, and repeated at the end of every ten minutes to the fifth time, without occasioning much nausea. The patient was then bled to *sixty* ounces, without syncope; the extension was kept up for two hours, with all the force which one man on the pullies could employ, before it could be reduced. In another case Sir Astley himself attempted reduction at a month from the accident; he applied the pullies in every possible direction; but, having used no constitutional measure, the limb was not reduced. These cases ought to be studied with care by every surgeon who is desirous of becoming master of this most important branch of his profession. In one case, admitted into Guy's Hospital, the bone was not only dislocated but fractured about its middle—a most troublesome complication, and seldom, in our author's opinion, admitting of reduction. In the case alluded to the dislocation was not reduced.

When violence is applied while the thighs are widely separated, the head of the bone is forced downwards into the FORAMEN OVALE, and the ligamentum teres and capsular ligament are torn through. The limb is lengthened two inches. In these cases the head of the bone may be felt towards the perineum; the trochanter major is less prominent; the body is bent forward, owing to the contraction of the iliacus internus and psoas muscles; and if the body be erect the knee is thrown forwards; the knee itself is widely separated from the other, owing to the extension of the glutei and pyriformis muscles; but the foot is generally neither turned outwards nor inwards, so that our chief diagnostic marks are the bent position of the body, the separated knees, and increased length of the limb. The head of the bone is below and a little anterior to the axis of the acetabulum, and a hollow is perceived below Poupart's ligament. In a preparation of this accident, in the collection at St. Thomas's Hospital, the head of the thigh bone rests upon the foramen ovale; the obturator muscle and ligament were completely absorbed, the foramen being filled by bone; and a bony deposit, forming a deep cup, was found around the foramen, into which

cup the head of the bone was received in a manner to allow of considerable motion, but from which it could not be displaced without fracturing the edge of the new socket. The inside of this cup was smooth. The acetabulum was half filled by bone. The head of the thigh bone was still covered by its articular cartilage, the ligamentum teres was torn through, and the capsular ligament partially ruptured; the pectinalis and adductor brevis muscles had been lacerated but were united by tendon; the psoas, iliacus internus, glutei and pyriformis were all upon the stretch. We conceive this to be a most interesting preparation, showing the astonishing resources which nature possesses in compensating for injuries.

The reduction of this dislocation is easy. If recent, all that is necessary is to place the patient upon his back, separate his thighs to the widest, pass a girt between the pudendum and thigh, fixing it to a staple in the wall, while the surgeon grasping the dislocated limb by the ankle, draws it across the sound leg, when the bone slips into the socket; or the thigh might be fixed by a bed post between the scrotum and upper part of the limb, and the leg then carried inward across the other. In general, however, it is necessary to fix the pelvis by passing a girt round it, and through the other girt which is fixed to the thigh. In old cases we are recommended to place the patient upon his sound side, and to fix the pelvis with a bandage, whilst another is passed under the top of the dislocated thigh, to which the pullies are affixed perpendicularly; by this means, the top of the thigh is drawn upwards, while the surgeon presses down the knee and foot, the limb being thus used as a lever. A gentleman was thrown from his horse and received a contusion upon the head, and dislocation of the thigh bone into the foramen ovale. No attempt was made to reduce the dislocation. Many months after, when the author saw him, the thigh was longer than the other, by the length of the patella, and the knee advanced forward. The toes were rather everted. The head of the bone could not be felt, and the great trochanter was much less prominent than usual. In progression, the knee being bent and the body thrown forward, he rested upon his toe and halted exceedingly. At first, the toe could with difficulty be brought to the ground, but he improves in walking, and there is now little pain in the joint, unless when he supports the body upon that limb alone. No attempt was made at reduction. An interesting case, communicated by Mr. Daniell, is detailed, in which reduction was accomplished between two and three weeks after the accident. In reduction, great care must be taken not to advance the leg in any considerable degree, otherwise the head of the bone may be forced into the ischiatic notch, from which it can never afterwards be removed.

Dislocation *backwards* into the ISCHIATIC NOTCH, is both difficult to detect and to reduce; to detect, because the length of the limb and its position as regards the knee and foot are but little changed comparatively with the dislocation upwards; to reduce, because the head of the bone is placed deep behind the acetabulum, over the edge of which, it requires to be lifted as well as drawn towards the socket. The limb is generally shortened not more than half an inch; the trochanter is behind its usual place, and inclines slightly towards the acetabulum; the head of the bone can only be felt in very thin people; the knee and foot are slightly turned inwards, so that the toe rests upon the ball of the opposite great toe; when the patient is standing, the toe, but not the heel, reaches the ground; the knee is a little forwards and slightly bent; and the limb is so fixed that flexion as well as rotation are in a great degree precluded. There is a specimen in the collection at St. Thomas's Hospital, in which the acetabulum is filled with ligamentous substance; the capsular ligament is torn at its anterior and posterior junctions with the acetabulum; the ligamentum teres is broken, an inch of it still adhering to the head of the bone; the head of the bone rests upon the pyriformis muscle above the sacro sciatic ligaments; the muscle is wasted, and although no attempt has been made to form a bony cavity, a new capsular ligament passes over the articulatory surface of the bone formed of condensed cellular substance, and containing within its cavity the broken ligamentum teres. Nothing is known of the history of this dislocation, but it must have existed for years: the adhesions were too powerful to admit of reduction; and if reduced, the head of the bone could not have been received into the acetabulum.

This dislocation occurs most readily when the abdomen is bent upon the thigh, or the thigh bent at right angles with the abdomen, and the knee violently pressed inward. For reduction, the patient is to be laid on the sound side, and the thigh bent to nearly a right angle with the abdomen. The pelvis is then to be fixed by a girt, passed between the scrotum and thigh, and carried backwards in the line of the thigh, to a staple fixed behind the patient. A wetted roller is to be applied above the knee and the leather strap over it, to which the pullies are applied by a strap from each side. As extension is going on, the top of the bone must be raised by means of a towel or bandage passed under the thigh. The assistant who manages this towel may pass it over his shoulders, and rest his hands on the patient's pelvis, which will enable him considerably to increase the force which he applies. In one case which Sir Astley reduced, ten days after the accident, he believes he should not have succeeded but for attention to two circumstances. The

pelvis advanced with the strap which confined it, so that he was obliged to cause the patient to bend his body forwards to preserve the thigh nearly at right angles with the trunk, and the extension might have been continued for any length of time without the limb being reduced, had not one of the assistants been directed to rotate the limb inwards. We are reluctant to pass over the detailed cases of this accident, each of which contains some important lesson, but we must confine ourselves chiefly to the didactic matter of the author.

In the dislocation backwards and downwards, as described by some authors, but of the existence of which Sir Astley entertains a well founded doubt, the head of the bone is still described as being in the ischiatic notch, and the limb as being elongated. This error must have arisen from an examination of the pelvis separately, for in the conjoined state, the notch is above the centre of the acetabulum, and consequently the limb, when the head of the bone is displaced into this notch, is shortened, not lengthened.

A dislocation upon the OS PUBES is easily detected. A person's foot while walking slips unexpectedly into a hollow, and the body being bent back, the head of the thigh bone is thrown forward. The limb is shortened one inch, the knee and the foot are turned outwards, and cannot be rotated inwards though there is slight flexion forwards and outwards; but the distinguishing mark is, that the head of the thigh bone may be felt upon the pubes, above the level of Poupart's ligament. Though so easy of detection, yet have three cases come within the author's knowledge, in which the nature of the accident was not ascertained till too late to attempt reduction. Nothing but the grossest neglect and carelessness on the part of the surgeon can occasion this error.

In dissecting an accident of this kind the acetabulum was found partially filled with bone, and in part by the trochanter major. The capsular ligament extensively lacerated, the ligamentum teres ruptured. The head and neck of the bone passed beneath the tendons of the psoas and iliacus externus muscles, elevating them and putting them on the stretch; the crural nerve passed on the fore part of the neck of the bone, upon the iliacus internus and psoas muscles. The head and neck of the bone were flattened, and above the level of the pubes, upon which a cup was formed, which embraced the neck of the bone locking it in certain directions to the pubes, while Poupart's ligament confined it in front. On the inner side passed the femoral vessels. The plates representing this, and the preparations of the other dislocations of the hip joint, which had been unreduced, exhibit, in the most clear and beautiful manner, the nature of those accidents and also the

powers of nature in accommodating herself to new circumstances.

In reduction, the patient is to be placed upon a table on the sound side, and the thigh carried considerably backwards. The pelvis is to be fixed in the usual way, by a girt passing between the thigh and pudendum, and fixed in a staple considerably in front of the line of the patient, but corresponding with the direction of the thigh. The pullies are fixed above the knee as in dislocation upwards, and the extension is made in a line behind the axis of the body, the thigh being drawn backwards. While the extension is making, an assistant raises the head of the bone by means of a towel passed under the thigh. In a case sent to the author by Dr. Gaitskill, then a dresser at Guy's Hospital, the extension was first made in a straight line with the body, without success. When extension was about completed in a line backwards, and Dr. Gaitskill had raised the head of the bone, by means of a towel passed under the thigh and across his own shoulders, the reduction was facilitated by one of the dresser's raising the ankle, and depressing the knee. The relative proportion of cases, according to the author, is twelve in the dorsum ilii, five in the ischiatic notch, two in the foramen ovale, and one in the pubes.

It is singular that Mr. Sharpe, formerly surgeon of Guy's Hospital, author of a treatise on surgery, and a skilful and experienced surgeon of his time believed, that dislocation of the thigh bone never occurred. The difficulties which then existed to the study of anatomy, especially morbid anatomy, is doubtless the cause why such accidents escaped the notice of the older surgeons.

A case is detailed, which occurred in the practice of Mr. Todd, professor of anatomy in Dublin. A robust young man fell from a height, fractured his skull, and dislocated his thigh upwards and backwards. The dislocation *was reduced without difficulty*, but the man continued comatose, and died within twenty-four hours. Between the gluteus maximus and medius, there was a large cavity filled with blood, and into which the extremity of the femur had been received. The pyriformis, gemini, obturatores, quadratus, and some fibres of the pectinalis were completely torn across. The orbicular ligament was irregularly lacerated, posteriorly and superiorly, and the interarticular ligament was torn out of the depression on the head of the femur, and remained attached to the acetabulum. A singular case is taken from one of the medical journals. At first the accident was treated as a fracture of the neck of the thigh bone, but afterwards several attempts were made unsuccessfully to reduce it. A year after the accident, the patient

applied to Mr. Cornish, of the Falmouth Dispensary, with the limb shortened two and a half inches; the knee and foot turned inwards; considerable distortion about the joint; and great pain on bringing the foot to the ground. In short, the limb was almost entirely useless. *Five years after the accident* this person being at sea in a coasting vessel, the ship made a lurch and he was thrown from his birth. At the moment he fell, he heard a loud crack in the hip; but from that time he put aside his crutches, and recovered the perfect use of this limb—altogether a singular case, and showing how easily reduction takes place, when the muscles are thrown off their guard.

We are apt to confound FRACTURES of the OS INNOMINATUM with dislocations, and, consequently, to aggravate the sufferings of the patient, and to hasten his death by trying unnecessary extension. When the fracture is through the acetabulum, the head of the bone is drawn upwards, and the trochanter forwards, so that the limb is shortened, and the knee and foot turned inwards: such a case may be mistaken for dislocation into the ischiatic notch. If the os innominatum is disjointed from the sacrum, and the pubis and ischium broken, the limb is slightly shortened, but the knee and foot are not turned inwards. Of the first of these accidents the author has seen two examples; of the latter, only one. They may be detected by a crepitus being perceived on the motion of the thigh, if the hand be placed upon the crista of the ilium; there is more motion than occurs in dislocations.

A hogshead of sugar fell upon a man, and the surgeon to whom he was taken, made slight extension to lengthen the limb, during which crepitus was felt. The man died in the evening. The posterior part of the acetabulum was broken, allowing the head of the thigh bone, to slip from the socket; the fracture extended from the acetabulum, across the os innominatum to the pubes; the ossa pubis were separated nearly an inch at the symphysis; the illia were separated on each side, and the pubes, ischium, and ilium of the left side broken; there was a pint of blood in the abdomen, and the left kidney greatly bruised. In another case, admitted into St. Thomas's, the appearances were those of a dislocation backwards. The man lived four days. The fracture passed through the acetabulum, dividing the bone into three parts, and the head of the thigh bone was deeply sunk into the cavity of the pelvis. A most interesting case is next given, but we have not space for the details. The patient, a woman, lived sixteen days. She had been bruised between the wheel of a waggon and a post. There was extensive ecchymosis of the one side, and the parts sloughed. The body of the pubis, and ramus ischii of the left side were fractured. The sacro-iliac symphysis of the right side was torn asunder, the

left also separated, so as to admit the handle of a scalpel. The ligaments and cartilage of the symphysis pubis were torn, &c. and blood effused behind the peritoneum.

The author has known three instances of fractures of the os innominatum to get well. Two of these were fractures of the ilium, and crepitus was perceived on moving the crista of the ilium; the third was a fracture of the junction of the ramus of the ischium and pubes. In the two first, a circular roller was applied round the pelvis, but no bandage was used in the latter. The patients were bled freely.

When the NECK or upper part of the THIGH BONE IS FRACTURED, it is apt to be confounded with dislocation, and indeed the discriminating marks are confessedly often exceedingly obscure. There are three species of fracture here, which require to be distinguished; that through the neck of the bone within the capsular ligament, that of the neck, where it joins the great trochanter externally to the capsular ligament, and lastly, fracture of the trochanter major itself, beyond its junction with the cervix femoris. In the first, the limb is shortened from one to two inches, and the trochanter is drawn upwards. The limb may be easily extended to the proper length, but it is immediately retracted by the muscles, until they acquire a fixed contraction, when the limb cannot be lengthened. The strong rotating muscles of the thigh turn the knee and foot outwards. It is not till some hours after the accident, that these symptoms acquire their decisive character; hence patients, even in hospital practice, are sometimes subjected to painful extension, on the supposition that the injury is a dislocation. We are recommended after examining the patient in the recumbent, to examine in the erect posture, having him supported by an assistant. The toes, in this position touch the ground, but the heel does not; the knee and foot are everted, and the prominence of the hip diminished. When the patient tries to bear his weight upon the limb, he feels acute pain from the psoas, iliacus, and other muscles being put upon the stretch, and from the broken bone pressing against the internal surface of the capsular ligament. Crepitus may be felt as in other fractures, though not invariably, by extending the limb to its proper length and rotating it inwards.

This accident occurs most frequently in women, especially the old, from the more horizontal position of the neck of the bone, and from the comparative feebleness of the female constitution. The circumstance of this fracture rarely occurring under fifty years of age is strongly diagnostic. It is known that the bones in old age become less resisting, and the neck of the thigh bone in particular, is often changed, both in its length and the angle which it forms with the shaft by interstitial ab-

sorption. Hence, from the bones in old age becoming thin in their shell, and spongy in their texture, the same violence, which at a more robust age would have dislocated the bone, now fractures it. The author particularly adverts to the slight causes which may often produce this accident, that the young surgeon may be aware how an accident, so serious, may arise from so slight a cause as a fall in the street for instance. A woman had the neck of her thigh bone fractured, from something catching her foot whilst she was suddenly turning round.

Sir Astley's experience, together with the result of many interesting experiments, made with a view to ascertain this point, lead him to believe that the dislocation we are speaking of, never, or at least but rarely, unites by bone. This is an interesting subject, and well merits the great attention which the author has given to it. No doubt he must have been aware that though the head of the fractured bone is nourished by only a few small vessels, from the ligamentum terres, that yet it might possess, in Mr. Hunter's strong and clear language, sufficient vitality to accept of the union. We certainly incline to think that if the fractured extremities could be placed in accurate apposition and absolute freedom from motion attended to, that a bony union might form; and we believe that the want of success arises from the difficulty of having these conditions accurately complied with. It is of consequence to decide whether bony union is possible, or whether the want of success may not be owing to the difficulties of putting the fractured extremities in a proper position, and maintaining them in it. The author ascribes considerable weight to the difficulties of getting the bones into accurate apposition, and to this we are disposed to attach more weight, than to the two other causes which he assigns, namely, want of pressure of the one extremity of the bone against the other, and want of ossific action in the separated head. It is the last reason, however, which the author considers to be the chief cause why a bony union does not take place. If we attend to the action of the muscles upon the great trochanter, tending to separate the divided extremities from one another, and the almost insurmountable difficulty of preserving the limb, for the due space of time in one position, we may see cause why this union by bone so seldom takes place in the fracture of the neck of the thigh bone. The want of pressure of the two extremities, clearly arises from the same causes, and doubtless, some share of the want of success may be attributed to this also. The head of the bone, it is true, derives its nourishment chiefly from the periosteum of the cervix, and as this is rarely undivided in fracture of the cervix, the chief source of nutriment to the head of the bone is cut off. But we can here only repeat what Mr. Hunter has so happily illustrated by ex-

periment, that much vitality is not necessary to enable a part to accept of a union, and the smaller that part is, the more readily will this event take place.

On dissection, the head of the bone is found in the acetabulum. The portion of the neck adhering to the trochanter, is in great degree absorbed, and this portion produces by attrition, a hollowing of the head or cervix attached to it. The capsular ligament is thickened; and the synovial membrane in a great degree, not only where it lines the capsule, but where it is reflected over the cervix, as far forwards as to the fracture. Synovia with serum is poured into the joint, which is absorbed, as the inflammation and irritation abate, and ligamentous substance is deposited, which, so far as the author's extensive opportunities of observing go, always constitutes the connecting medium. In the experiments performed upon rabbits and dogs, it was found that the phenomena were similar to what occur in man; but when the bone was fractured longitudinally, and in part external to the capsular ligament, *bony union* to a small extent took place.

From dislocation into the foramen ovale, and upon the dorsum ilii, this fracture may be distinguished by the eversion of the foot and mobility of the limb; in dislocation upon the pubes, the head of the bone is felt in the groin, which always forms a clear and distinguishing sign. From fractures external to the capsular ligament, it may be known by the great shortening of the limb, the absence of crepitus, unless when the limb is elongated, and rotated; the slight causes which produce the almost entire absence of local or constitutional irritation, and the great age of the patient.

Observe what the experience of Sir Astley establishes, regarding the cure.—"I have been baffled at every attempt to cure, and have not yet witnessed one single example of union in this fracture." An intelligent surgeon, visiting one of the continental hospitals, was thus addressed—"some of you English surgeons do not believe that we unite fractures of the neck of the thigh bone; now there is one you shall examine, as the patient is dying." The joint was examined, but the fracture was found still disunited. The boastful surgeon only gave a shrug of disappointment. If the periosteum of the cervix, however, be not torn through, or if the head be broken, and the cervix still remains in the acetabulum, union may be produced, but in neither of these cases is the limb shortened.

"If I sustained this accident in my own person," says the author, "I should direct that a pillow should be placed under the limb throughout its whole length, that another should be rolled up under the knee, and that the limb be thus extended for ten days or a fortnight, until the inflammation and pain have

subsided. I should then daily rise and sit up in a high chair, in order to prevent a degree of extension that would be painful." Patients ought, in a few days to be allowed to walk with crutches, for which a stick may after a while be substituted; in a few months no support is necessary.

In fracture, EXTERNAL to the CAPSULAR LIGAMENT, the limb is but little shortened, the foot is everted, much pain is felt in the hip and top of the thigh inside, the hip loses its roundness, but what chiefly distinguishes it from the former, is its occurrence under fifty years of age, seldom is it met with at a later period; it is produced by severe injuries only, such as falls from a height, and carriages passing over the pelvis; there is crepitus upon slight motion, and without elongating the limb; the sufferings of the patient, especially on motion, are acute, from the broken extremities of the bone rubbing against the muscles; the thigh and leg are swollen; there is high irritative fever; and months elapse before the patient recovers any use of the limb. Though the limb is usually little retracted, yet this circumstance depending upon the degree of obliquity in the fracture, and laceration of the surrounding parts, it is sometimes, though rarely, shortened more than an inch. The seat of this fracture is found to vary considerably, though it is usually at the root of the cervix. It is singular that in the three cases detailed, the age of each patient was above sixty:—in one upwards of eighty-three, the neck of the bone was fractured at its junction with the body, and driven into the cancelli between the two trochanters; and what was very curious, an addition was made to the trochanters, by which means they rested upon the acetabulum, thus giving an opportunity for supporting the weight of the body. Mr. Wray's patient, aged 64, died on the fourth day, in consequence of the irritative fever produced by the accident. There was great extravasation of blood between the muscles, suppuration had began near the trochanter major, and the neck was received into the cancellated structure of the shaft of the bone. In one case the head and neck formed one portion; the trochanter major a second; the trochanter minor, also fractured, a third; and the body of the bone a fourth; and these parts had all united by bone, though not quite in the natural position, and with very little shortening of the thigh.

The double inclined plane is recommended for the cure of this fracture, and a splint on the outside of the thigh, extending beyond the trochanter major; and it is to be firmly fixed by a leather belt round the pelvis, so as to press one portion of bone to the other; the splint is to be fixed also at the knee. In this position the limb is to be kept steady for eight weeks, when the patient may be permitted to rise, if the attempt does not give him pain, but he must wear the splint with the straps for a fort-

night longer. Making the sound limb the splint, by which to keep the fractured one from retracting, also succeeds, together with a belt round the pelvis, to press the fractured extremities together.

When the TROCHANTER MAJOR is fractured, the limb is a little, sometimes not all, shortened; the foot is benumbed, the patient sometimes cannot turn in bed without assistance, or the attempt gives him pain; the trochanter is generally widely separated from its natural situation, sometimes drawn forwards towards the ilium, at others falling downwards towards the tuberosity of the ischium; the foot is greatly everted; and the patient cannot sit without excessive pain. This fracture unites firmly and speedily, and good use of the limb is restored. A girl, aged sixteen, fell upon her hip on the edge of the pavement, and in four days applied for admission into Guy's Hospital, when the constitutional symptoms being severe, she was placed under the physician. The limb was everted, and appeared half an inch elongated. It admitted of passive motion in all directions, but abduction gave great pain, and she had no command over the rotators inwards. As she had walked both before and after admission, it was doubted if the cervix femoris could be fractured, and the closest examination of the trochanter and body of the bone could not detect the least *crepitus* or *displacement*. She died some days after the accident. There was no swelling, nor could the slightest crepitus or displacement be yet felt. Matter had formed towards the trochanter minor. The bone was now dislocated, and not till then was it discovered that the great trochanter was fractured at its root. The tendons of the lesser glutæi and commencement of the vastus externus, attached to the outer side of the process being untorn, so completely confined the fractured trochanter in its place, that even when the head of the bone was dissected from the body, motion was allowed only in one direction.

When the thigh bone is fractured just below the trochanters, the contraction of the iliacus internus, and psoas muscles, pulls the broken portion forwards and upwards, so as to form nearly a right angle with the body. Union consequently takes place, with great shortening of the limb, and a hideous projection forwards. Pressure upon the projecting bone, only adds to the patient's suffering, and is quite incapable of preserving the bone in its proper situation. The knee must be elevated over a double inclined plane, and the patient kept in the sitting posture well supported by pillows during the cure. The degree of elevation of the body must be regulated by the approximation of the fractured extremities of the bone,—this position is necessary to relax the psoas and iliacus muscles. It is only in this way, says our author, that great deformity can be prevented. When

all projection of the upper portion is thus removed, we are recommended to buckle a strong leather belt, lined with some soft material, round the limb.

It is with regret we must pass over for the present, the clear and satisfactory account of dislocations of the knee, ankle, &c. as we would willingly confer upon our readers a small share of the satisfaction which we have derived from going over these subjects with the author; but our limits do not permit it. We must, therefore, pass on to the concluding article of the volume, namely, injuries of the spine; confessedly a subject of great importance to the profession, as well from the serious nature of such accidents, as from the doubtful nature of the practice to be adopted in many instances.

Dislocation, according to our author, never occurs in the spine, at least in all the numerous instances in which he has inspected the bodies of those who have died of injury of the spine, he found fracture and displacement. Still the possibility of dislocation of the cervical vertebræ, from the greater obliquity of their articulatory processes is not denied. The first accident taken up is concussion, which may be produced by blows or great violence suddenly bending the spine, to which succeeds paralysis of all the parts beneath, from which, however, recovery gradually takes place. A log of wood fell upon a man's loins. He was nearly deprived of the motion of his lower limbs, and their sensibility was greatly impaired. He was cupped, purged with calomel, blistered, and had a discharge kept up from the loins for three weeks. The limbs were rubbed with stimulating liniments. In six weeks he had nearly recovered. He was then submitted to the influence of electricity, and in ten weeks his cure was completed. The utility of the stimulating liniment and electricity, may, we think, be very much questioned.

A blow upon the vertebræ may occasion extravasation of blood upon the spinal chord itself, though more frequently it takes place upon the sheath. A boy, upon a swing, had the whole of the cervical vertebræ violently strained. No bad effects immediately resulted, but the boy afterwards became dull, forsook his play, and gradually became weak and powerless. He was brought to London ten months after the accident, with severe and frequent pain in the back of the neck, and occasionally, slight in the head. The muscles of the hind head, and neck, were stiff, and painful to the touch, and on motion. He had little voluntary power of motion in the limbs. Blisters, setons, and mercury were used without much effect. The boy died a year after the accident. On sawing out the posterior parts of the cervical vertebræ, the theca was found overflowed with blood, which extended between the theca and bony canal, from

the first vertebra of the neck, to the second of the back, both included.

Fracture of the vertebræ, without displacement, often produces extraordinary symptoms and even sudden death. A woman in the venereal ward of St. Thomas's, while at dinner, fell suddenly forward, and on being raised was found dead. The dentiform process of the second vertebra had been broken off, and the head falling forwards, the root of the process was forced back upon the spinal marrow. Mr. Cline was consulted in the case of a boy three years of age, who, by a fall, injured the neck, after which he was obliged to walk carefully upright, as a person carrying a weight on his head; and when he wished to examine objects on the ground, he supported his chin upon his hands, gradually lowering his head; but if the object was above, he put his hands to the back of his head, and so regulated its motions. Any shock caused great pain, and obliged him to support his chin with his hands, the elbows resting upon a table. He died a year after the accident. The atlas was found fractured, so that the dentiform process of the second vertebra, having partly lost its support, was apt to compress the spinal marrow in different inclinations of the head; and nature led him instinctively to aid with his hands the muscles of the neck, during the various motions and positions of the head.

A portion of spinous processes may be broken off, but the spinal marrow is unaffected unless there has been considerable concussion. A boy supported a heavy wheel, by putting his head through the spokes, but it over-balanced him and he fell, bent double; so that when brought to the hospital he had the appearance of one who had long suffered from distorted spine. The injury had produced no paralysis; three or four spinous processes were fractured and drawn obliquely to the one side. He speedily recovered without any particular attention, but he remained deformed.

Fracture with displacement above the third cervical vertebra is immediately fatal if the displacement be to the usual extent, because the phrenic nerve is involved in the paralysis, and the diaphragm consequently ceases to act. In the same accident, below the third cervical vertebra, death occurs at various periods of the injury; and the effects of such injury vary according as the fractured vertebræ are nearer or more remote from the head. If a lumbar vertebra be displaced, the lower extremities are insensible to burning or pinching, and the will of the patient has no power over the muscles. The sphincter muscles of the rectum and the bladder are paralysed, so that the fæces pass off involuntarily and the urine requires to be drawn off. The circulation, though languid, continues, and is sufficient to preserve the heat of the limbs. A blister applied

will still inflame, vesicate, and heal, though it produces no feeling to the patient. The patient generally dies within a month or six weeks from the accident, the urine for some time passing off involuntarily. One patient lived two years after the accident, and then died of gangrene of the nates.

If the fracture and displacement be of the dorsal vertebræ, the symptoms do not vary much from the above; the paralysis extends higher up, and the abdomen is excessively inflated. The patient, usually, does not survive the accident above a fortnight or three weeks, though in one case, the person lived nine months. Of course, death will occur sooner or later, according as the injury is nearer or more distant from the neck, and according to the degree of displacement and consequent injury of the marrow.

In fractures of the cervical vertebræ below the origin of the phrenic nerve, in addition to the symptoms already mentioned, the arms are paralysed; if as high as the fifth vertebra, completely so; but if the fracture be only of the sixth or seventh, some power of motion remains. If the fracture be oblique, one arm may be more affected than the other. Respiration is difficult, and wholly dependant on the diaphragm, as the intercostal muscles cease to act. Death ensues from the third to the seventh day, according as it is the fifth, sixth, and seventh vertebra which is injured. On dissection, the spinous process of the displaced vertebra is found depressed, the articular processes are fractured, and also the body of the vertebra, for rarely does the displacement happen at the intervertebral substance; the body of the vertebra is usually advanced from half an inch to an inch; and between the vertebra and sheath of the spinal marrow, blood is extravasated, or the extravasation may be on the chord itself. In slight displacement, the spinal marrow is compressed and bruised, but it is torn quite through when the displacement is great, though the dura mater remains entire, and a bulb forms upon the lacerated ends of the marrow.

A man had his spine broken at the lower dorsal, or first lumbar vertebra. Cure was attempted by preserving the spine in a state of absolute rest; the patient was placed on a fracture bed, which permitted him to evacuate the fæces without disturbance, and the urine was regularly drawn off. After some weeks, the bladder could retain a pint and a half of urine, and this could be discharged voluntarily. At the end of six months, the back was straight, flexible, and as strong as ever; the urine could be retained and passed at pleasure, though, perhaps it was expelled chiefly by the abdominal muscles; the bowels were moved every third or fourth day; health and spirits good; but there was neither sensation nor voluntary motion in the lower extremities. He died in a year, from disease of the tuber ischii. The bodies

of the first and second lumbar vertebra were found to have been fractured; the first had advanced; the second had been drawn backwards. The fracture was united by ossific matter, which had spread over the fore part of both vertebræ, and a little had been deposited on the dorsal vertebræ. The spinal canal was diminished by a piece of bone being forced into it from the first lumbar vertebra, which had split the theca, and divided the marrow, a bulbous projection of it appearing above and below the bone, which were nearly an inch apart.

From this case, and others, it is clear that rest allows of ossific union, but this is not enough to save the patient, unless the pressure upon the spinal marrow be removed. Mr. Henry Cline considered this as an accident the same in its nature with depression of the cranium, and requiring the same kind of treatment. In one case, he laid the patient upon his breast, made an incision upon the depressed bones, raised the muscles, applied a small trephine to the arch of the vertebra on either side, so as to remove the spinous process and the arch of the bone which pressed upon the marrow. The case did not succeed; yet, was Mr. Cline justified in trying the operation from the universal fatality, which attends such cases under the usual treatment. Since the publication of the present volume, this operation has been performed by Mr. Tyrrel, of St. Thomas's Hospital. The operation was performed forty-eight hours after the accident; the arches of two of the vertebræ, we believe the first lumbar, and last dorsal, were removed: the operation was so far satisfactory, that the patient had more feeling in the extremities after it; he died upon the twelfth, or fourteenth day of violent abdominal inflammation, which seemed to have had its origin in the bladder. The result of this case is, we believe, generally allowed to be in favour of operating in such cases. It is hoped that the abilities and professional zeal of Mr. Tyrrel may induce him to give the particulars of this interesting case to the public. Sir Astley, speaking of Mr. Cline's case, is not sure that such operations would be ultimately successful.

In one case, a severe injury of the spine was followed by inflammation and ulceration of the spinal marrow. After a time there was sudden pain in the back, paralysis of the lower extremities, retention of urine, and involuntary discharge of fæces. Towards the close of this patient's existence, there was pain and distention of the upper part of the abdomen, anorexia, fever, and profuse perspirations. On opening the spinal sheath a milky fluid was found within it, just above the cauda equina, and for the space of three inches higher up; the spinal marrow was ulcerated to a considerable depth and softened into the semifluid state which the brain assumes from putrefaction. This affection is analogous to the *ramollissement du cerveau* of

French authors. The bladder was found much inflamed and enlarged. The inflammation in such cases, ought to be prevented or subdued by cupping or leeches, blistering, issues, &c.

Of the merits of this work, alike creditable to the author and to his country, it is unnecessary for us to say much. Every symptom is detailed from the careful examination of numerous cases; the author seems to have lost no opportunity of ascertaining by post mortem examination, the nature of the different accidents of which he treats, and the reparatory processes which nature sets on foot for remedying them. In deducing sound practical rules from these, and other sources of information, the hand of a master is every where apparent.

Experimental Researches on Absorption and Exhalation, read at the Institute of France, by M. Fodera.*

(From the London Medical Repository, for May, 1823.)

It is no longer contested, at the present day, that it is to the experimental method we owe the major part of the important discoveries which have been made in physiology from Galen's to our own day. By it Haller changed the face of the knowledge of life. Bichat added, richly added, to it; and in our time M. Magendie has given to it a fresh impulse.

It would be a curious work to place in parallel, as regards their number and importance, the phenomena discovered by simple observations collected in a state of health or disease, and those which experiments have revealed to us. We should see that, in the majority of cases, experiments have elucidated and perfected what observation had only been able to commence. Thus the most ancient physiologists had observed some isolated facts, which appeared to announce to them that a more or less regular motion was impressed on the liquids contained in the different vessels; but the discovery of the circulation of the blood was the fruit of the experimental method.

Observation had made known, in a sufficiently vague manner, the phenomena of absorption. Hippocrates had observed, *Aspirabile totum corpus tam foras quàm intro.* But, by the aid of experiments, these general notions have become very much more precise. It is by experiments that the agents of absorption have been discovered; it is by them that the absorbent faculty of each tissue has been strictly appreciated. The recent researches of M. Fodéra, on absorption and exhalation, the in-

* Analyzed by M. Andral, jun. (*Journal de Physiologie, par Magendie. Janvier*, 1823.)

genious experiments which he has performed, the curious results to which he has been conducted, afford us a new proof of the advantage of the experimental method.

M. Fodéra's end has been to demonstrate that exhalation, which he calls *transudation*, and absorption, which he names *imbibition*, are similar phenomena, owing to the imbibition of the different vessels; operating in the first case from the interior of the vessel to the exterior, and in the second from the exterior to the interior.

M. Magendie had already proved that venous absorption takes place by imbibition.* One of his experiments consisted in completely isolating a portion of vein, and placing its surface in contact with an active poison: its presence was soon discovered at the internal surface of the vessel. M. Fodéra has inversed the experiment. He injected a poisonous substance, with every proper precaution, into the interior of a portion of artery comprised between two ligatures, and isolated from its cellular tissue, its lymphatics, and its *vasa vasorum:* poisoning took place. He obtained the same result by filling with poison a portion of an artery, vein, or of intestine, removing and placing them either at the surface of a wound made in another animal, or in the abdominal cavity. In these different experiments, the rapidity of the poisoning appeared to vary according to the age and kind of animal; the thickness and length of the portion of vessel or intestine, its greater or less distention; the more or less perfect solution of the injected matter, &c.

M. Fodéra has also seen gases absorbed in the same manner. He placed in the peritoneal cavity of a rabbit sulphuretted hydrogen, inclosed in a portion of intestine removed from another animal; at the end of some time symptoms of poisoning manifested themselves, and the sulphuretted hydrogen was no longer found in the intestine.

If we expose, in a living animal, an artery or vein, an oozing (*un suintement*) is observed to take place through its parietes. This oozing augments, if a ligature be applied to the vessel: different dropsies may likewise be produced by the ligature of the great venous trunks.

M. Fodéra concludes, from these facts, that exhalation is only a phenomenon of transudation through the parietes of the vessels, as many Physicians had thought, before the exhalent vessels were imagined.

The following experiments prove that, at least, on the dead body, transudation of liquids may take place at the same time, from the interior to the exterior, and *vice versâ*, through the vascular or intestinal parietes. M. Fodéra filled a portion of a rabbit's intestine with a solution of prussiate of potash, and

* Journal de Physiologie, tom. i.

plunged it into a solution of hydrochlorate of lime: he introduced into another portion some hydrochloric acid, and surrounded it with sulphuric acid: finally, he placed a bladder, filled with tincture of turnsol, in a solution of gall nuts. Some time afterwards he found in the interior of these portions of the intestine and of the bladder, hydrochlorate of lime, sulphuric acid, and gallic acid, by the tests of nitrate of silver, hydrochlorate of barytes, and sulphate of iron: and in the liquids in which they had been immersed, prussiate of potass, hydrochloric acid, and tincture of turnsol, by the tests of sulphate of copper, the nitrate of silver, and by the reddish colour of the solution of galls being rendered bluish by the potass.

On injecting at the same time into the pulmonary vein of a sheep, a solution of hydrochlorate of barytes, and one of hydrocyanate of potass into the trachea, M. Fodéra also found hydrocyanate of potass in the pulmonary artery, and hydrochlorate of barytes in the bronchiæ.

Similar phenomena may be produced upon a living animal. The author has found, for example, in the bladder or in the thorax, substances which had been injected into the peritoneum; and in the abdominal cavity, substances which had been introduced into the thorax or bladder. In these experiments he employed the solution of galls and sulphate of iron, or rather, the latter salt and prussiate of potass.

The black or blue colour, announcing that transudation has taken place, is frequently not observed until the end of more than an hour: it may be rendered almost instantaneous by putting in action the galvanic influence. For this purpose, the ingenious experimenter injects into the bladder, or into a portion of the intestine of a living rabbit, a solution of prussiate of potass, communicating with a copper wire; externally, he places a cloth wet with a solution of sulphate, communicating with an iron wire: these wires are put in contact with those of the pile. If the galvanic stream be directed from the exterior to the interior, by making a communication between the iron wire and the *positive* pole, and between that of copper and the *negative*, the tissues of the organs imbibe the Prussian blue: if the stream be changed, the colour appears on the cloth.

M. Fodéra injected into the left cavity of the thorax of a rabbit a solution of hydrocyanate of potass, and into the peritoneum a solution of sulphate of iron; he afterwards kept the animal placed on its left side for three quarters of an hour. At the end of this period the animal was opened, when he found that the whole of the tendinous part of the diaphragm had imbibed the blue matter: the muscular part was much less tinged, and only in isolated points. The substernal lymphatic glands were likewise blue. The thoracic duct contained a bluish li-

quid: the peritoneal membrane of the stomach and duodenum was covered with spots of the same colour: they were observable, but in less number, on the rest of the digestive canal and on the arteries. The lymphatic ganglions of the mesentery, the suspensory ligament of the liver, the epiploon, were also tinged blue. Some small sub-peritoneal veins presented a slight blue coloration of the liquid contained in their interior. Twelve hours afterwards, the blue tint of these different parts was much more intense.

The progress of the coloration may be traced, and the phenomenon in some measure be seen in its different *phases*, by injecting a ferruretted solution of prussiate of potass into a portion of the intestine of a living animal; tying both ends, and plunging it into a bath containing sulphate of iron. At first a slight coloration, only, is observable in the parts, which gradually becomes deeper: afterwards the liquids of the lymphatics and of the blood-vessels become coloured in their turn. In the latter, the coloration begins by small ramifications, and afterwards extends to the branches, which are observed to be filled with intervals of blood and a blue liquid. In these experiments M. Fodéra discovered the presence of the prussiate of iron in the lymphatic vessels, in the thoracic duct, and, finally, in the portion of the inferior vena cava contained in the chest.

M. Fodéra concludes, from these different experiments, 1st, that exhalation and absorption take place by transudation and imbibition, and depend on the *capillarity* of the tissues; 2dly, that this double phenomenon may take place in every part, and that the liquids imbibed may be conveyed equally well, either by the lymphatic vessels, or by the arterial or venous. But (the author very wisely adds) the phenomena of exhalation and absorption ought not to be considered as connected alone with imbibition and transudation: the modifications which they experience from the action of surrounding agents, from the nervous influence, the state of rest and motion, the energy of the circulation, the affinities of the substances with the tissues, the derangements produced by disease, and the elaboration which the fluids undergo whilst absorption and exhalation are taking place, ought likewise to be studied.

M. Fodéra endeavours to explain the increase of exhalation in the phlegmasiæ by the dilatation which the parietes of the capillary vessels experience; the interstices of the fibres which form those parietes become at such times increased, and, consequently, permit a more ready issue to the fluids: the serosity and the white globules, which are smaller than the red, are first effused; at last the red globules themselves occasionally escape. It will be seen that this mode of conceiving the phenomenon

does not explain the infinite modifications, which the liquids exhaled into the inflamed parts undergo.

The author afterwards notices cases in which the lymphatics or thoracic duct have been said to contain different substances, which have been introduced either into the digestive canal, the serous cavities, or into the cellular tissue. If the effects of absorption are not manifested in the experiments, where a portion of intestine, containing poison, has no longer any communication with the rest of the body, except by a lymphatic vessel, we must seek for a cause in the extreme slowness of the circulation of the lymph. M. Fodéra inserted some liquid prussiate of potass in the subcutaneous cellular tissue of the thigh and abdomen of two young rabbits. In the first animal, at the expiration of a few minutes, and in the second, at the end of half an hour, he found it in the lymph of the thoracic duct, in the urine, the mucus of the intestines, the synovia, the serum of the blood, the serosity of the pericardium, of the pleura and of the peritoneum, as well as in all the solid parts, except in the crystalline, the cerebral substance, the interior of the nerves, and the osseous tissue. In another experiment the interior of the nerves presented traces of it.

Would not these experiments tend to prove that absorption in these cases had taken place at the same time, both by the lymphatics and blood-vessels?

As for absorption by the arteries, it can no longer be doubted. In fact, tie the artery and mesenteric vein of a rabbit, immerse the portion of the intestine on which they are distributed into a warm solution of prussiate of potass, and inject into the interior of the vein a warm solution of sulphate of iron; you will observe in the liquid which flows from the artery previously incised, prussiate of potass, and in the solution in which the portion of intestine is immersed, sulphate of iron: so that, in this experiment, the artery absorbs, the vein exhales. If, therefore, in the experiments which have been hitherto made, liquids absorbed have only been found in the veins, it must have depended on the current which takes place from the arteries to the veins.

The experiments performed in England by Darwin, and more recently by Wollaston, Brande, and Marcet, tend to prove that different substances introduced into the stomach are found mixed with the urine, without having passed by the lymphatics or blood-vessels.

M. Fodéra has repeated these experiments, and made them undergo an ingenious modification, which has discovered to him phenomena unobserved by the English physiologists. He introduced into the bladder a plugged catheter, after having tied the penis in order to prevent the urine from flowing along

the sides of the sound. He laid bare the œsophagus at the anterior part of the neck, and injected into the stomach a solution containing some grains of the ferruretted hydrocyanate of potass. This being done, he frequently removed the plug, and received on filtering paper the urine which escaped. On this paper he dropped a solution of sulphate of iron, and added to it a little hydrochloric acid in order to destroy the colour. In one experiment the prussiate was detected in the urine ten minutes after its injection into the stomach, and in another five minutes afterwards. The animals were opened immediately. The salt was found in the serum of the blood taken from the thoracic portion of the vena cava inferior, in the right and left cavities of the heart, in the aorta, the thoracic duct, the mesenteric ganglions, the kidneys, the joints, and the mucous membrane of the bronchiæ.

This important experiment proves the extreme rapidity of absorption: it shows also that the prussiate of potass found in the urine, is conducted thither by the ordinary circulating ways.

The following experiment demonstrates the rapidity of pulmonary absorption in particular. M. Fodéra opened the thorax of a rabbit, and removed the heart, immediately after some prussiate of potass had been injected into the trachea. This operation was performed in twenty seconds: the interior of the left auricle, however, presented a bluish green colour, which was more deep at the mitral valve, and less apparent in the aorta. The absorption, therefore, seems to take place at the very instant when the injection has penetrated into the subdivisions of the bronchiæ.

M. Andral's analysis is concluded by some eulogistic and well merited remarks on M. Fodéra's communications.

Sir A. Crichton *on Pulmonary Consumption and Tar Vapour.**

(From the Quarterly Journal of Foreign Medicine and Surgery, for April, 1823.)

Obscurity and inelegance of style, seem to be the failings of many of our English writers, who have been long in Russia. Is it that the elegance of the Russ (which according to a late writer was the mother tongue of Æneas, Romulus, and Numa,) renders men insensible to that of every other language? We

* Practical Observations on the Treatment and Cure of several Varieties of Pulmonary Consumption; and on the Effects of the Vapour of Boiling Tar in that Disease. By Sir Alexander Crichton, M.D. F.R.S., &c. &c. pp. 261, 8vo. London, 1823.

cannot think so. If a man's ideas are not naturally confused, he ought to be able to express them in every language with which he is acquainted. Did Gibbon write unintelligibly in French, or Voltaire in English? No foreigner, however, could well be sixteen years in Russia, and become physician to the Autocrat of the North, without merit, and on that account we shall minutely, and we hope candidly, scrutinize the work of the good old knight of the red eagle now before us, though it be somewhat confused and obscure.

Sir Alexander Crichton writes, principally, to recommend the tar vapour in phthisis; but at the same time he has favoured us with his opinion of many other remedies employed in that disease. With regard to tar vapour, he observes, that if only one in twenty phthisical patients in Britain be saved by its use, he should be acquitted of presumption in recommending it. Even in tubercular phthisis, he thinks it beneficial, as when in combination with a regulated temperature, he has had proofs of its efficacy, even when Laennec's *stethoscope* (chest examiner) had certified the presence of *pectoriloquism*, (the sound denoting a præternatural cavity in the chest.) Even when a great part of the lungs had been destroyed by vomicæ, and the patient was nearly in the last stage of phthisis, Sir Alexander has known a complete cure effected by the use of tar vapour. However, in some cases, the disorganization stops of itself, or the disease is cured by a peculiar diet and regimen, or by the accidental use of some remedy. Many believe that it is the *phthisis pituitosa* of the Germans only, which is curable by tar vapour; but in most of the cases at St. Petersburgh and Berlin, which were considered as hopeless, there were indubitable symptoms of tuberculous disorganization, and frequently scrofulous diathesis. Many though in a regulated temperature, were getting worse previously to the use of tar vapour; so that the cure cannot be ascribed to temperature.

Speaking of the climate best adapted for phthisis, Sir A. condemns the practice of sending consumptive patients to the south of France, the north of Italy, Naples, and Cintra in Portugal, and making them undertake sea voyages at improper seasons, or ordering them from the country to the sea-side. Consumption, he observes, is infinitely more frequent in Great Britain and Ireland than in Russia; and this immunity of the latter country is owing, not by any means to a warmer or finer climate or to a better diet, but to the sheep-skin clothing of the natives and to the closeness of their houses; and it is not among the common people, but the nobility, or those who have adopted the dress and manners of Western Europe, that consumption has become prevalent. The lungs in Russia are alone exposed to the cold, but by warm clothing, the circulation on the sur-

face and in the extremities is so equable, that they suffer no injury from it. In Lapland, also, as we are informed by Linnæus, consumption is extremely rare. The best preservation, therefore, against pulmonary consumption is warmth, or whatever keeps an equal balance of circulation on the surface. Blood driven from the surface suddenly on the lungs, in Sir A.'s opinion, favours congestion in their capillaries, and by this means is apt to produce tubercle and its consequent inflammation. He observes, that the less air a consumptive patient takes into his lungs, and the less motion he gives them, the better; but this often depends on the action of the heart, which it is not always in the patient's power to regulate; hence those remedies are beneficial which allay the irritability of the heart and arteries, provided they do not injure the vitality of the patient. On this account, hydrocyanic acid, opium, henbane, fox-glove, the tepid bath, moderate doses of tartar emetic, and calomel, have been employed.

In the scrofulous diathesis, according to Sir Alexander, the vascular system, particularly the lacteal and absorbent parts of it, are comparatively weak; and its absorbents are much more easily torn by injected fluids, than those of a healthy subject. Hence, says he, we may explain the phenomena without supposing any general acrimony of the fluids, of which there is no proof. The effects of such defective organization, therefore, must be a more languid circulation and congestions in particular parts. In Russia the effects of scrofula are dreadful, but it generally makes its attacks on the external glands, or on the face, eyes, throat, and bones of the extremities, and its frequency and virulence depend in a great measure on the diet of the inhabitants. When a child of a weakly constitution begins to lose its appetite and to be affected with langour, when its features have shrunk, and when its eyes have become heavy and deprived of their usual lustre, a scrofulous action is going forward, or at least rapidly forming. Such a state will be most effectually counteracted by whatever renders the circulation free in the capillaries of the surface, or removes congestion from the internal parts, and by freeing the intestines from every accumulation which may impede the action of the abdominal vessels, or particularly occasion pressure in the lacteals. For this purpose, the daily use of a salt-water bath from 92° to 96° of Fahrenheit, stimulants which produce a permanently increased action on the vessels of the skin, and the preparations of antimony, and submuriate of mercury, with the alkalies, sarsaparilla, and arnica montana are recommended. For removing scrofulous depositions, Sir A. has found no remedy more effectual than the common blue oxide of mercury with antimony, in combination with the pil. galban. comp. and a strong decoction

of sarsaparilla. In the treatment of incipient scrofula, and indeed of many obstinate chronic disorders, he has found no remedy more beneficial than mercury, particularly well prepared calomel; but the constant experience of thirty-four years, has proved to him that it did best in very minute doses. In climates of moderate temperature, Sir A. never found it necessary to give more than from five to eight grains of calomel, as a purgative in croup, scarlatina, or threatening hydrocephalus; and in chronic diseases or threatening disorganization, he found the third of a grain sufficient, given twice or thrice a day, till the gums were slightly affected. However, in scrofula, attended with much debility, he never induces mercurial action; but in such a case, he finds mercury given as an alterative, and alternated with mild tonics, of great service.

We must now say something of TAR VAPOUR. The author wishes it to be considered as an auxiliary only to the general treatment, which the varieties of phthisis, and the constitutions of individuals may demand. Most of those persons, who have recommended vapours of any kind, have employed them so indiscriminately that they have been called enthusiasts. Galen recommended the inhalation of the fumes of arsenic; and others have recommended aromatics in a dry or liquid state. Billard, a French author, was the first who recommended the vapour rising from equal parts of yellow wax and resin melted together, with the occasional addition of Peruvian and Canadian balsam. But most of these things, fell into disuse, from the physician or attendants becoming tired of their minutia; and on that account it is only in hospitals that a fair trial can be given to them. On this subject, Sir A. says, no one had published before himself; but Mr. Mudge had conjectured that the benefit arising from sea voyages might be owing to the effluvia of tar. However, a foreign physician residing at Portsea, a Dr. Lazaretto, has assumed the entire merit to himself, though his pamphlet appeared a year after that of Sir Alexander Crichton.

The author laments to find that it has been unsuccessful in Great Britain; and this, he has no doubt, depends on the want of due precaution, and on the openness of the houses, a circumstance, which he did not sufficiently attend to, when he published his pamphlet. Besides, it has been used in improper cases, particularly in hæmoptoe, a thing which he had expressly forbidden; but many physicians had the imprudence to use it without ever having read his pamphlet. This has been occasioned in a great measure by the indolence of mankind, who catch eagerly at a specific, as that which will save them trouble, or the medicine may have been given in desperate cases, merely to gratify the patient. But is it fair, in this case, to blame the remedy or the physician who recommended it? The vapour has

been used also, in a concentrated state, in acute tubercular inflammation of the lungs, when it could not fail to do harm; and patients have been directed to inhale it from a bag or gazometer, at which time it always proves injurious from its heat and concentration to ulcerated lungs. At the Charitè of Berlin, when used properly, it has been nearly as successful as at St. Petersburgh; one in twelve of decidedly consumptive cases being cured, and one in five much relieved by it. It cannot be recommended with any certainty of benefit, when there is a hard and rather quick pulse accompanying the other usual symptoms of tubercular phthisis; and it can do no good where the scrofulous disposition is general and affects the viscera of the abdomen as well as those of the chest. Sir A. met with one consumptive patient, who could not bear the smell of tar, even in its natural state, being seized with syncope, whenever it was brought into the apartment. But other vapours may be substituted for it; as those of the balsams, and resins. A spurious work of Galen, has recommended the vapour of burnt sponge, than which no smell can be more repugnant, or more likely to do harm.

The tar best adapted for consumption is that used in the navy, and in cable manufactories. It should be as liquid as possible; for if it is too thick an irritating vapour will arise from it when exposed to heat; indeed, impure tar is soon discovered by its disagreeable odour. As it comes to market, it is generally more or less contaminated with pyroligneous acid; but this may be removed by boiling an ounce or two of subcarbonate of potash with every pound of the tar for a few minutes, before bringing it into the patient's apartment; and when there, it should boil with the lowest possible heat, to prevent the disengagement of a white smoke which will produce violent coughing. In private practice two adjoining apartments should be impregnated with the vapour, so that ventilation may at all times be employed when necessary. But in the open rooms of Britain, it is almost impossible to charge any one of them with vapour; whereas, in the Russian houses nothing is more easy. The simplest way of doing this is to put a pint or more of prepared tar into any flat dish of iron, copper, or earthenware, and then to place it on a stand, about a foot from the floor with a lamp under it. The tar at first must not be placed too near the patient. In very dry weather it is useful to have a basin of wet sand in the apartment to supply moisture. In mild weather patients may visit pitch-houses, and remain there till giddiness or violent headache oblige them to retire; and if they are nigh such establishments, they may repeat their visits several times a day. It is in such places only that the air is fully impregnated with the finer parts of the tar, which can but rarely be diffused in the

small dimensions of an apartment. The temperature of the rooms, where the patient is exposed to the vapour, should be mild and equable, his diet should be plain and nourishing, and he should have plenty of mucilaginous decoction and occasional opiates. The vapour should be immediately desisted from, if it induce pain, difficulty of breathing, and a lessening of expectoration, without any abatement of the cough. In hospitals, too many phthisical patients should not be confined to one room, otherwise the air will be polluted by volatilized pus, and other animal matters. The author strongly recommends the creation of public establishments for the treatment of phthisis, not only for the purpose of trying tar vapour, but all the other remedies that have been at any time prescribed.

His theory of the vapour's action is not very intelligible, but he thinks it *hastens the softening or resolution of tubercles;* and he imagines that it diminishes the quantity of oxygen in any given quantity of air. This is mere supposition.

We shall now follow the author, as he is making his remarks on various pulmonary complaints, and shall endeavour to select any thing useful that may meet us in our way. He very justly observes that, the phthisis which arises from tubercles, or *scrofulous secretions* and *depositions* in the lungs, is the next prevalent in this and in similar climates; but this simple observation he has complicated with an hypothesis, which he does not seem to put much faith in, as he thinks it very possible that tubercles may be diseased glands, at first invisible, but afterwards enlarged by disease. Here, we fancy, there is a kind of leaning to the opinion of Dr. Baron, but most of his notions about tubercles, seem to have been imbibed from the writings of Laennec, and of course it is not requisite that we should particularize them. From some cases that have fallen in his way, he is inclined to think that tubercles, when not numerous, may be altogether absorbed, and the patient restored to pretty good health; this state being, we apprehend, what Dr. Baron calls consolidation of the tubercles. We are told by Sir A. that tubercles are forming in the lungs, when the following circumstances are present: rapid emaciation and loss of strength, a frequent dry cough, difficulty of breathing on taking exercise, especially on going up an ascent, flying pains in the chest, or a fixed, though moderate pain in either or both sides of the chest, a shrinking of the features, and a scrofulous diathesis, and when they are fairly formed, we may observe, he tells us, an increase of cough, or expectoration of a curd-like mucus, or of a puriform matter tinged with blood, a still more rapid decay of vigour, and frequently symptomatic fever. When this kind of phthisis, he remarks, is attended with much fever, and strong inflammatory action in the lungs, it very quickly proves fatal, unless we are

able to subdue that action; on the other hand, in its chronic form, it may continue for years, the tubercles slowly forming, and gradually discharging their contents. But in all this, there is nothing new, the first kind being evidently the galloping consumption of the vulgar.

The CURE OF TUBERCLES, according to our author, is most easily effected before they have become too numerous; but he thinks that, if a stop can be put to their increase, the cure will go on best at the period of their softening. This opinion must be given in allusion to the tar vapour, which is supposed to be employed then with the most benefit. But it appears to us that, all our author's notions about tubercles are vague and contradictory, and destitute of that *lucidus ordo*, so conspicuous in the work of Dr. Baron.

In the cure of chronic tubercular phthisis, Sir A. employs every known means for correcting a scrofulous diathesis; he confines his patient, for months, to his apartments, both in winter and summer, and makes him breathe gently, but constantly, a moist tar vapour atmosphere, while the temperature, at the same time, is exactly regulated. He makes him take exercise twice or thrice a-day in the open air, in summer, when the weather is very calm and warm. He forbids the use of tea, coffee, and acid drinks; but he allows his patient to take good beef or mutton soup to breakfast, or cocoa, milk, or chocolate, and to dinner, soup or boiled or roasted meat in moderate quantity. The medicines he uses to promote the resolution and discharge of tubercular matter, are those already mentioned as useful in scrofula, to which he adds hemlock and Iceland moss, and what produce effects chiefly on the absorbent and lymphatic vessels, such as the seeds of the Phellandrium aquaticum, at present so much in vogue in Germany. The phellandrium is said to have great power in the cure of obstinate ulcers, and to be very beneficial in pulmonary affections. Its seeds have an aromatic and rather acrid taste, and they may be exhibited in substance, from the dose of a scruple to that of a drachm, twice or thrice a-day. When the pulse is uniformly quick, and rather hard, or when the cough is frequent, and the expectoration scanty and difficult, these seeds, in Sir A.'s opinion, are injurious; but in chronic tubercular phthisis, in phthisis pituitosa, and in chronic bronchitis they are serviceable. In short, they act very much like the seneca root. As we have already said, the tar vapour is inadmissible in the acute tubercular phthisis; and the use of all stimulating and tonic remedies, although they are frequently given from the idea too generally entertained, that the quick pulse of that kind of phthisis is merely occasioned by debility. "Here, the cure" says Sir A., "must be antifebrile and anti-scrofulous, and not merely anti-catarrhal."

To subdue tubercular inflammation, he has great confidence in the red sulphuret of mercury, combined with a very small proportion of tartrate of antimony, or the pulvis antimonialis. When the tubercles give much pain, he has derived benefit from the hydrocyanic acid, but upon the whole, he thinks, that it is a very uncertain and unsatisfactory medicine. In advanced phthisis, whether acute or chronic, it is inadmissible, from its impeding expectoration, and increasing dyspnœa, and general uneasiness. He employs myrrh and galbanum, when nature, as he imagines, is not active enough in *resolving* or *softening* tubercles. We should, however, use every means in our power, to prevent the increase of tubercles; and this may be done by means of blisters, issues, and setons on the external surface of the chest; or we may form pustules on the skin, by applying tartar emetic ointment. We agree with Sir A. in thinking that this last remedy often, to all appearance, gives a favourable bias to the complaint; at least, so we have thought, in some cases; but the fearful look of the eruption, so near their bosoms, seems to give no little terror to young ladies. Sir A. has often made large issues, with the hope of great benefit, but he has generally been much disappointed; indeed, it was only in the very earliest period of tubercular phthisis, that they ever appeared to do any good. When they are beneficial, the appetite increases, the pains vanish, the cough abates, the expectoration is lessened, the breathing becomes easier, and the patient gains strength and spirits. But when the tubercles are softening, and when they are not too numerous, very great benefit is produced, if the patient is made to breathe the vapour of boiling tar; but often neither this, nor other remedies, show their good effects, till they have been used for some weeks; but even, although the cough should be a little increased, on the first application of the vapour, we should not desist from its use. Palliatives, in the mean time, are always necessary, and these are generally sought for among the narcotics; and Sir A. has often found a combination of these answer better than any one of them separately. Emetics have been much praised; but in the commencement of tubercular phthisis, when there is a little or no expectoration, they generally do harm; and when the complaint is far advanced, they are prejudicial, by exhausting very rapidly the vitality of the patient. When an emetic is given, it should be in a full dose, so as to produce immediate vomiting. When the hectic fever is fairly established, that is, when phthisis is in its most exquisite form, it is needless to employ any other than palliative remedies. Even in this state, however, the tar fumigation often produces the happiest changes. The kind and quantity of exercise must be determined by the strength of the patient; and it should be begun about half an hour before the accession of

the fever. During its hot stage, water, impregnated fully with carbonic acid, to which a little light wine may be added, should be drunk frequently, but in small quantities at a time. Sir A. reprobates the use of steel and myrrh in the last stage of phthisis; indeed, he thinks steel a very injurious article in every stage of tubercular phthisis; but he allows that it does good in pituitous phthisis. From bark, as a tonic, he never perceived that the patient derived benefit; but he never gave it in large doses, every four hours, as recommended bv Morton. In the commencement of chronic tubercular phthisis, we think it has done good; at the end, never. To have a good effect, however, it must be given in very large doses. The tonics which Sir A. has employed with most success, are the Iceland moss, the watery extract of myrrh, and as much nourishing food as the patient can well bear. He suspects that the cases in which Dr. Griffith succeeded with myrrh and steel, were those spurious hectics which occasionally accompany amenorrhœa; and he thinks it was atonic bronchitis, in which Morton found cinchona beneficial. In the *hot* stage, in very *hot* weather, or in a *hot* apartment, he thinks that the patient, in some cases, may be sponged with cold vinegar and water. We imagine that Sir A. speaks very much at random on sponging, when he requires so many *hot* things during its application.

The author is very eloquent on the subject of milk, quoting, in its favour, the authority of the most respectable physicians of ancient and modern times. He speaks highly of it himself, and says that when it agrees with the patient, it should be combined with no other article of food, except farinaceous grain, or amylaceous substances, for, if joined with animal food, the mixture is apt to occasion a vitiated secretion of bile. Here Sir A. very properly condemns the practice of making a healthy young woman give suck to a consumptive patient; a practice which he has found very agreeable to the physicians of Germany. Some very remarkable cases are mentioned, as having occurred from the use of milk, combined with a fresh animal fat, especially the fat of mutton. Among the vegetable articles that may be mixed with milk, he hesitates to include potatoes, from the idea that, their natural juice is poisonous; yet, horses and other animals eat them with this juice, very constantly in winter, and live.

Should any symptoms of syphilis appear, mercury must be employed, and the ointment in preference to all its other preparations; nor does phthisis contra-indicate the use of mercury, the disease having been occasionally cured by mercurial action; during the course, the tar vapour, and the internal medicines may be continued.

Such are the most material of Sir A.'s remarks on tubercular

phthisis. We may add to them that, he disapproves highly of rearing children, who have a tendency to tubercular phthisis, too hardily, that is, by exposing them to all kinds of weather, and plunging them daily in a cold bath.

Hæmoptysis, as we all know, may produce sudden death, or a complete recovery may ensue, or it may end in one of the worst kinds of purulent phthisis. It sometimes rises from numerous tubercles impeding the pulmonary circulation, and throwing too much blood on some particular part of the lungs; and the evil will be aggravated, if, at the same time, there is mal-conformation of the chest. We think it needless to mention, as Sir A. has done, the preceding and concomitant symptoms of hæmoptysis, but we may observe that, one of its frequent causes, a narrow and contracted chest, may be enlarged, if means are employed for that purpose, before growth is completed. The most common means is, to make the patient place his hands upon some solid substance, and frequently draw deep inspirations; yet it must not be carried so far as to occasion pain. The frequent exercise of the arms is also useful; and so is almost every kind of moderate exercise. But, above all things, Sir A. thinks that warm clothing is necessary in mal-conformation of the chest.

The cure of pulmonary hæmorrhage is well known; but it may not be amiss to make some remarks on that subject. The first class of patients should either be put in warm water or wrapped up in some warm dress; but the head, neck, and chest, may be exposed to cold air. The hands, also, should be kept warm. When the circulation is free in the extremities, venesection may be performed. Next, Sir A. applies a blister to the sternum, and another to the back; and instead of astringents, he gives nitre and sulphate of magnesia combined, every two hours, till one or two loose stools are procured. After these, he trusts very much to emollient drinks and saline medicines. If bleeding is carried too far, there is danger of asphyxia; or should that not happen, the power of absorption will be much weakened. In cases where hæmoptysis has returned frequently, the exhibition of small doses of pulv. ipec. comp. seems to have done much good; but where effusion has been extensive in the parenchyma of the lungs, it should not be administered till heat and febrile action are subdued. Of course, laxatives must be given occasionally during its use. In a weakly constitution the Iceland moss is often necessary as a tonic. No medicine will excite the absorbents better than mercury and ipecacuanha. Squills, Sir A. thinks, are always improper in hæmoptysis; he has known even ipecacuanha hurtful. A milk diet, or at least some very light food, is necessary. The patient, as much as possible, should be in an erect posture; he should keep the

most perfect silence; and indeed, every irritation connected with the lungs should be avoided.

We next follow the author to peripneumony and its consequences. The fur dress of the Russian renders him little susceptible of this complaint; but it is not unfrequent among the soldiery and certain votaries of fashion. When this disease terminates in suppuration, Sir A. says that, the matter is often combined in an ulcerated cavity; but, from Laennec's dissections, it would appear, that it is more commonly diffused through the parenchyma of the lungs. When consumption follows this suppuration, it finishes its course much more rapidly than tubercular phthisis; and in this case, mercurial and antimonial medicines are inadmissible. The treatment, which is made much more difficult, too, when the peripneumonic abscess is complicated with hepatitis; and the same cause may excite both diseases. Unless the hepatic affection is very slight, we can have no hope whatever of a cure.

In the cure of phthisis from peripneumony, narcotics, and particularly opium, are often serviceable if they are employed in a moderate dose. In such cases the cough is an effort of nature to relieve the lungs; and a narcotic, given in a large dose, by producing an accumulation of pus, would in most instances occasion indescribable anxiety and oppression. In a nervous habit, narcotics may be given with much more freedom; however, the most useful of all remedies, in this case, is an atmosphere impregnated with the tar vapour. After the bursting of the abscess, emetics often do much good, by assisting the evacuations of pus, or promoting its absorption; but if, instead of lessening the cough and symptomatic fever, they increase perspiration or diminish appetite, we should relinquish them entirely. The tar vapour at first must be employed in a very diluted state; and indeed, should not be employed at all, till the atonic stage of the disease is fairly established. If it occasion pain or tightness of breathing, or a dry cough, it must be omitted for a few hours, but, unless there be some remains of inflammation, such a thing seldom happens. In case of pain or increase of cough, or suppression of expectoration, Sir A. advises that the vapour of a decoction of aniseeds, marshmallow flowers, and poppy heads should be inhaled by the patient; and on the expectoration being restored, he recommends the employment of the tar vapour. It is in this variety of phthisis, he says, that Iceland moss, seneca, cinchona, myrrh, galbanum, sulphate of zinc, and acetate of lead appear to do most good. At first, they should be given in moderate doses. On all these remedies, Sir A. makes some practical remarks, which our limits will not allow us to particularize. Exercise, he highly recommends; and he thinks it is in this variety of phthisis, that a sea voyage does the

most good. In the combination of peripneumonic phthisis with hepatitis, leeches or cupping, blisters, and mild mercurials are the chief remedies in the early stage, and mercurial frictions, the blue pill, taraxacum, chelidonium and tartrate of antimony, in minute doses, are to be employed in the second or atonic period. The author here informs us, that chelidonium majus is possessed of undoubted efficacy in atony of the liver; and he regrets that it has been rejected by the London and Edinburgh Colleges.

Sir A. having now entered on the subject of bronchitis, observes that he has known only three cases of it which gave birth to cynanche polyposa. The phthisis pituitosa of the Germans, and the peripneumonia notha of Sydenham, are the same disease, which, though often confounded with catarrh, is in reality chronic bronchitis. After giving a very exact enumeration of the chief symptoms of the complaint, Sir A. tells us that its characteristic features are, a constant cough, a purulent-like expectoration, a quick pulse, emaciation, and at length hectic fever. The patient's sweats are partial and irregular. The expectoration is thinner than it is in catarrh, and is coughed up without pain and in larger quantity; and in general a full inspiration can be made without pain or irritation. After a time the disease assumes every character of pulmonary consumption; but notwithstanding the appearance of the matter in many cases, there is no ulceration; but, whether it be pus or mucus, no change of treatment is requisite for the disease. We next have those symptoms enumerated, which indicate a complication of chronic bronchitis with diseased liver; and he observes, that in Britain this complication is most frequently met with in the lower orders of society. If the patient has been exposed to cold, the disappearance of erysipelas or any cutaneous eruption, attended with a serous discharge, or the healing of an old ulcer, may occasion an attack of chronic bronchitis. A cold solution of acetate of lead, or even of oxymuriate of mercury, applied for a long time to parts of the body affected with a serous eruption, may produce it. The sudden suppression of the catamenia, the translation of rheumatic and gouty inflammation to the lungs, and the peculiarity of constitution, induced by common fever and scarlatina, are frequent sources of the disease. The most fatal kind of it is that which attacks dram-drinkers.

When chronic bronchitis is unconnected with tubercles or with ulceration of the lungs, as a consequence of peripneumony, it is in general curable: the chief remedies are the vapour of heated tar, emetics, tonics, blisters, and, indeed, most of those remedies which we have mentioned as beneficial in the consumption which follows peripneumony. Yet the disease does

not always admit of tonics or pectoral stimulants; and the practitioner should on no account use them, if there should be an increase of cough, and the supervening of pain or tightness in the chest. Sir A. has found the acetate of lead beneficial when joined with opium, in cases where the expectoration was very great; but during its use he gave castor oil every third or fourth morning.

Sir A. enters at some length on the treatment of measles, advising a constant warm moisture to be kept on the skin by means of tepid aqueous and mucilaginous drinks, during the eruptive fever; but though the temperature of the patient's apartment should be equally warm, he must on no account be loaded with bed-clothes. But all this, we presume, is well known to the generality of practitioners; we shall, therefore, only mention that he disapproves highly of giving Dover's powder, or antimonials to bring out moisture on the skin. When bronchitis follows measles, it requires all those remedies which we have already enumerated.

In that dangerous disorder, laryngeal phthisis, of which we have an accurate description, the author has found the tar vapour of singular service; with the external application of blisters. His internal remedies are Iceland moss, and the balsams of Tolu and capivi, and sulphur at bed time.

Sir A. towards the end of the volume, has favoured us with some remarks on the hereditary disposition to pulmonary consumption, and on its contagious nature in certain circumstances; but they are not new. At the end of the book we have a great number of very good formulæ; but with regard to medicine he had previously made the following remark. "Modern Pharmacopœia's are shorn so much of old and approved receipts, on account of their being extraordinary compounds, as to be almost quite useless in some cases!"

We have thus given some account of a work, which, although it afford no great specimen of literary talent, we believe to be a faithful record of the author's practice; and we can conscientiously recommend it to the younger members of the profession as a useful sketch of the disease of which it treats. The style is not elegant, but it is sufficiently intelligible.

An Exposition of the Principles of Pathology, and of the Treatment of Diseases. By DANIEL PRING, M.D. Member of the Royal College of Surgeons. 8vo. pp. 512. London, 1823.

(From the London Medical Repository, for July, 1823.)

THIS is a work calculated to introduce an important reform into the medical literature of the age. Its author, while he ap-

preciates fairly the value of correct investigations, and intimate and profound views in pathology, exposes ably and energetically the fundamental tenets of the existing systems of medicines: and while he examines the principles of our science, with great candour and judgment, and with great force of reasoning and happy methods of illustration, he separates, with acute powers of discrimination, the valuable results of observation and experience, from the numerous assumptions and conjectures which have often served as the basis of vague hypothesis and speculation. The very extended and comprehensive views, also, which the author takes of the causes, relations, and phenomena of disease, place his own conclusions on a firmer basis than that possessed by any pathologist who has preceded him, in advancing general principles of the nature and treatment of disease. Without offering any preliminary observations, we shall proceed to analyze his interesting production.

The work is divided into *ten* chapters: the 1st is an examination of the *humoral pathology;* the 2d of the *doctrine of spasm;* 3d, of the *doctrine of Brown;* 4th, of the *pathology of the determination of blood;* 5th, of the *origin of disease in the abdominal viscera;* 6th, of the *origin of disease in the nerves;* 7th, of the *relations of disease;* 8th, *general principles of pathology;* 9th, *speculative doctrines of therapeutics;* 10th, *practical principles of therapeutics.* Six of these chapters are entirely critical; but while the author examines, in a profound manner, the principles which characterize the particular systems which these chapters embrace, he discloses views which are more fully developed in the subsequent parts of the work. It will readily be seen that it will be out of our power to analyze, in a suitable manner, and within our limits, those parts of the volume which are themselves essentially a review: we shall only endeavour to convey an idea of the manner in which Dr. Pring has executed this part of his undertaking; nor shall we regret the way—so unsatisfactory to ourselves—in which we are obliged to perform our office; since we are confident that to all those who esteem profound views in pathology, and a critical deduction of sound principles, by which they may guide their speculations and practice, an extended analysis of this work will be almost superfluous, as they will be contented only with a repeated perusal of the work itself; while to those, if there be any such at the present day, who value only empirical precepts in medical practice, and who contemn pathological principles—the philosophy of our profession—any review of a book like the present will be unacceptable.

Chapter I. Humoral pathology.—Dr. Pring justly remarks, that although the humoral pathology has now given place to other doctrines, yet the evidences in favour of it are quite as

conclusive as those for some of the opinions by which it has been superseded; "yet, although it is not held," he observes, "in much reverence by pathologists, it is still the popular one: it appears more level to general apprehension than any other; and it is by no means uncommon for those of the profession to avail themselves of this popular apprehension, and to account for many circumstances, which they are called upon to explain, upon false or absurd principles, rather than to risk the suspicion of not being able to explain them at all. Thus they oftentimes gain credit for superior knowledge: and those who can condescend to accept reputation upon such terms are seldom deficient in the information, that an appeal to the fallacies and prejudices of human nature is generally more successful than an address to its better understanding."

After noticing the causation contended for by the humoral pathologists, and after pointing out their errors in regarding matter as originating disease, and in resorting to mechanism for the explanation of the animal phenomena, Dr. P. remarks, that analysis has taught us to look to another set of powers, —has taught us to regard these morbific matters not as the causes, but as the effects or products of disease. "In all instances in which the order of occurrences is perceptible in the generation of the morbid poisons, the disease precedes the formation of the matter: thus the immense pustular eruption in small-pox is the consequence of the fever incident to this disease; and thus irritation, in all other instances, precedes, and does not follow, the purulent or lymphatic secretions." This is unquestionably just both as it respects the generation of morbid poisons strictly so called, and of several other secretions. The change is first produced on the vital properties of a part, or of the system generally, before the morbific matter is formed; and then such matter is not formed *in* the mass of blood, but *from* the blood, by the previous charge induced in the vital properties possessed by the capillary vessels or texture of the part whence the morbid matter is produced. Yet, although this appears to be the succession of phenomena which an intimate view of the matter would lead us to adopt, there are other circumstances of disease in which the causation is not so apparent, and some in which the mass of fluids seems to be more intimately and immediately concerned: but even in the majority of these a strict analysis will convey us to a previous cause; and we shall frequently discover some defect in the vital functions or properties of an important organ or viscus. Thus, as we have stated, on a former occasion, the nature of a climate or the state of the atmosphere shall impede or diminish the functions of an important organ employed in producing certain changes on the blood, or in eliminating from it certain

of its elements, or the effete matters which it may contain. The consequence is an excess of these elements or materials, which, if not removed by the vicarious office of another viscus, will be the cause of either a general or local disease. In such cases, although previous disorder may be inferred, but little sensible derangement can be noticed until the circulating mass of fluids has become changed in such a manner as to disorder the healthy relations of the system. This point could be farther illustrated by proofs derived from a strict investigation of those maladies which result from the presence of a noxious cause inhaled into the lungs, or received into the digestive canal, &c. We believe, however, that a strict examination of the causation, in these cases, will also furnish us with evidence equally favourable to the opinion, that a portion if not the whole, of the noxious cause has been received into the circulation, deteriorating or changing the vital properties of the system by its presence there, as that which can be brought in support of the opinion that the morbid impression has only been made upon the vital relations of the part to which it was immediately applied, without at all affecting, in a primary manner, the state of the blood, or acting by its presence within the blood-vessels. If we were required to state our belief upon this important and fundamental subject, we might, from some attention long paid to the subject,* illustrate fully what we shall beg leave to say briefly, that such causes appear to act in both these modes, in many instances, and more or less in either, in other cases: that while some of them, owing either to their own properties or to the state of the recipient, affect the vital relation of the parts which they invade, or which are most sensible to their impressions, externally to the blood-vessels—without being absorbed, others are received into the circulation, are carried along with it throughout the textures, and, from their presence within the vessels, produce their effects on the system: and that many of them seem to act in both the modes pointed out; the one mode preponderating to a greater or less extent, according to the nature, relations, and combinations of the cause, and circumstances of those on whom it acts.—But to return to our author, from whom our partialities to humoralism could alone have drawn us.

Dr. Pring next discusses the properties of those morbid poisons which affect the animal economy in a specific manner; and considers that they have certain vital properties or relations bestowed on them, at the period of their formation, which are calculated to influence the system in such a manner as to oc-

* See a Letter to Dr. Hutchinson in Vol. XLIV. of the Medical and Physical Journal.

casion the formation of a substance—a matter—or morbid poison, similarly constituted to that which produced it: but we will allow the author to speak for himself on this interesting subject, and to state the lengths to which he carries his opinions.

"It is more agreeable with the results of analytical inquiry to conclude, that the animal poisons contain latent properties of a vital kind, which are related to those of the same kind in living bodies; that the phenomena of disease or death, which ensue from the operation of the animal poisons on living bodies, are according to the nature of the properties which are engaged in this relation. It seems proper, in all questions which respect the nature of the properties to which animal processes are to be assigned, to consider those agents as belonging to the department of life whose operation cannot be explained by any perceptible analogy to the agency of chemistry or of mechanism." "It appears, then, that certain animal fluids are endowed with the qualities of poisons, by latent vital properties which are allied with the fluid material. This affinity between these subtile properties and the grosser fluid prevents the dissipation of the former, and preserves also the characteristic of the latter; it serves at once to limit and to extend the relations of the poisonous qualities: by it these qualities have a fixed place; and by the medium with which they adhere, they are capable of mingling with the fluids of animal bodies, and of being, in this way, conveyed into the circulation. It appears probable, that by the existence or absence of this affinity between the active properties of the animal poisons and a fluid medium, the distinction may be furnished between the contagious and infectious diseases. According to the entire absence or the degree of this affinity, we should find some diseases which are wholly infectious, others which are both infectious and contagious, and others which are only contagious."—Pp. 10, 11.

This is an ingenious explanation of a difficult subject; and, although many powerful objections may be urged against it, yet we think no better mode of accounting for the perpetuation of contagious disorders has been proposed—and, indeed, none so good. The concluding sentence of the quotation would have been more perspicuous, if the author had informed us as to the exact meaning he attaches to the words contagion and infection.

The next topic of importance which the author examines is the opinion respecting an error loci. This term, and the meanings attached to it, are noticed and compared with the more usual terms at the present day, viz. congestion and obstruction. With respect to the imputed obstruction of secreting organs, the liver furnishes him with an appropriate subject of examination, and, indeed, of illustration: and here he justly observes, that allowing "the secerning system of the liver to be obstructed by the fluid which it separates, and which is still contained in tubes subject to the impulse of the circulation, the

secretion has then only the force of a reagent in disease, the primary cause of which is a disordered state of those powers of life by which the separation of bile from blood is accomplished." This is exactly what we should conceive; but we will even go farther than our author, and contend, even if the flow of blood in the vessels be impeded or obstructed, that this state of the blood, as well as a similar obstruction of the bile contained in the secerning system, (which, however, we believe to be, in that situation, beyond the impulse of the circulation,) are the result of the same cause, namely, of those vital properties with which the vessels of this organ are endowed; because we conceive that the circulation of the blood in the portal vessels of the liver, the secretions from these vessels, the condition of these secretions, and the flow of the secreted fluid along the vessels containing it, are all the result of the properties—powers—or influences with which these tubes are endowed, from a source which it is unnecessary to inquire into at this place. What has been now stated regarding the liver may be extended to other secreting organs.

Dr. Pring offers a remark on the relation of the absorbent system with this subject, which should be kept in mind. "Whether, supposing," he observes, "the secretion of bile or of urine be healthy, the absorbent function of the structure in which calculi are found may be supposed to have any agency, as by a partial separation from bile, or urine, of some constituents, leaving a concreted residuum, is a conjecture, for the decision of which we want facts."—From this topic Dr. P. passes on to consider some facts connected with the state of the blood which have been lately but too much neglected; but which, we predict, without pretending to more inspiration than was allowed by Pliny to the *medicinæ vates*, will receive a more general attention; since pathologists, instead of attaching themselves exclusively to one particular creed or dogma, are taking more extended views of the operations of the animal economy, and are attaching themselves more to the simple results of observation, than becoming partisans of a particular sect. These facts connected with the state of the blood relate chiefly to its colour, its degree of thickness, the cohesion of its crassamentum; the relation which these states bear to the action of the heart and of the arteries, and the effects which great losses of blood produce upon both one and the other, and upon the nervous system. And here we cannot deny ourselves the pleasure of presenting our less experienced readers with the following remarks on great losses of blood, which appear to be the result of intimate observation, which entirely agree with our own experience, and which, moreover, direct experiment has entirely verified.

"There is seldom a slow pulse in those who have lost much blood, either by the lancet, by an accidental wound of an artery, or by uterine hæmorrhage. On the contrary, the pulse is apparently full, bounding and ranging perhaps from 90 to 120; and if under the latter rate, is easily raised up to it by the most trifling excitement." * * * * * * "It is commonly, and in my own experience it has been invariably, the case, that those who have sustained great losses of blood, suffer more or less from what is called determination to the head. The symptoms most commonly are intense pain and throbbing in the forehead or back part of the head, with a pulse seldom under 90. I have known these symptoms to proceed on, with a pulse from 120 to 140, to delirium, serous apoplexy, and death."—Pp. 22, 23.

This is a subject of great importance in practice. After great depletion, and especially when depletion has been conjoined with active purgation, the state of the pulse ought not to be trusted to. The nature of the pulsations of the heart, the proportion of the crassamentum to the serum, the firmness and appearance of the former, and the colour, &c. of the latter, ought to be attended to. It is impossible to state a general rule by which we ought to be guided on all occasions; but for the benefit of the unexperienced, we may mention, that when this apparently vigorous circulation is present after large depletion,—and the crassamentum of the blood last abstracted is either not very firm, or not very much cupped, but especially when it is small in proportion—the serum being abundant and watery,—and when the feet have been at any time cold,—no more blood ought to be taken away: the experienced and discriminating practitioner will be always able to distinguish, by means of the concourse of phenomena which his mind will grasp and duly weigh, that condition of the blood and vascular system which is the result of great depletion, from that which requires a repetition of depletory measures. For other interesting particulars connected with the consideration of the humoral pathology, we must refer our readers to the work.

The great activity of the circulation and of the pulse, so generally observed after large depletions, and which may often be noticed, even when depletion has been carried nearly to inanition, is in a great measure to be referred, in the opinion of Dr. Pring, to the tenuity of the blood occasioned thereby (as is evinced by the great proportion of serum in the portions last abstracted and by other circumstances), subjecting it to a stronger impulse from the heart; "and to the diminished resistance of the fluid, to a more easy propagation of this impulse throughout the circle of vessels, than obtains when the blood contains more crassamentum, and, possessing greater gravity,* is consequently less susceptible, in remote points of the circula-

* To which we may add, less tenuity.

tion, of the impulse given by the heart." The increased proportion of serum in the circulating fluid he is disposed to refer to the greater activity of absorption in the cellular membrane, and diminution of exhalation and secretion, occasioned by the earlier evacuations of blood, and to the effects of these evacuations on the properties of life.

Chapter II. Doctrine of Spasm.—Dr. Pring commences this subject with some remarks on the manner in which the doctrine of spasm entirely superseded the humoral pathology; and he afterwards observes, that "granting, for the present, that the extreme vessels are liable to this state of spasm, the effects which are ascribed to it cannot take place without recurring, at least in part, to the humoral pathology, which this doctrine was designed to supersede." He afterwards notices the opinions respecting suppressed perspiration, which form a part of the doctrine of spasm; for, as spasm of the superficial vessels is supposed to prevent the discharge of the fluids by the skin, and as the retention of them is considered to be hurtful to the system, they can only produce such an effect in one or both of two ways; "first, either by the determination of a larger quantity of fluids to the internal parts, in consequence of their escape from the surface being prevented; or, secondly, by the retention of fluids which possess qualities of a noxious kind, and the evacuation of which by the skin is therefore necessary to health. The first alternative evidently proposes a mechanical explanation; and the second is nothing less than a recurrence to the doctrine of peccant humours." This is, we think, a strong objection, although the followers of Cullen may contend, that the changes induced in the vascular system by spasm of the superficial vessels are not confined to the retention of the cutaneous excretion, which may or may not be discharged from the blood by the internal surface of the digestive tube and by the kidneys; but that these changes are chiefly extended to the venous and arterial trunks and ramifications, in internal and vital organs, or in the vicinity of the head, the vital condition of which may be altered, independently of the retention of fluids of a noxious kind.

Dr. Pring farther argues against the supposition of suppressed perspiration being the cause of many diseases, from the circumstance that several disorders which are more commonly imputed to such a cause, run a protracted course, while patients labouring under them have been frequently and long bathed in sweat. He afterwards notices a third mode in which spasm may act in producing disease, which we have just stated, viz. internal plethora or altered relations of the internal vessels; but the supervention of such conditions or relations of blood-vessels, he justly contends, may be imputed to some predisposition in the

seat of disease not existing in other parts of the body, which predisposition does not amount to actual disease, although nearly allied to it, until exposure to cold or any other exciting cause produce that state of the system usually attributed to spasm of the superficial vessels.—The observations which the author makes respecting the morbific qualities which have been ascribed to the perspiration in relation to the doctrine of spasm are interesting: the same may be still more deservedly said of his examination of this theory, as it has been employed to account for inflammation. Here his remarks evince great powers of discrimination, and convey illustrations derived from an intimate view of the phenomena which take place in the vascular system from the application of various agents.

Chapter III. Doctrine of Brown.—"The doctrine of John Brown," Dr. Pring very happily observes, "was a production of genius; an offspring of the imagination, but little corrected by the understanding: it was an intellectual meteor, the light of which was brilliant, but deceitful and evanescent. Such was its general character and destiny: a few rays have, however, survived, and still rescue the doctrine from entire oblivion." The fundamental principle of Brown, that an animal was originally endowed with a fixed sum of the principle of life, "which was afterwards to undergo perpetual and rapid exhaustion to the time of its death, is contrary to all analogy." Yet upon such a basis was his doctrine built. Dr. P. adduces very cogent arguments against this postulatum, which most satisfactorily disprove both it and the inferences deduced from it. We regret that our limits prevent us from giving an analysis of many excellent observations which Dr. P. has introduced in the course of his reasonings on the principles of this pathology; we can merely briefly notice the manner in which he examines its leading characters. Having shown the unsoundness of the assumption, that animals are endowed with a certain sum of excitability at their birth, which forms the physiological basis of the doctrine, he next examines the pathological principles which have been built upon it, and which, although they must necessarily fall with the assumption which served as their basis, yet deserve attention as they have received the sanction of many who never entertained the fundamental part of the creed. Diseases, according to this pathology, are only of two kinds, one arising from excess, the other from deficiency of vigour or excitement, which latter term designates the state of life—all diseases being attributed by it to the state of the excitement. The author goes on to argue against this arbitrary assignment of some disorders to certain supposed degrees of excitement, by adducing those instances where many of the phenomena referrible to vigour or excessive excitement are present, while others essen-

tial to the existence of this state are either entirely absent, or exist in a very inferior degree. He very justly remarks that there seems to be no degree of life, as far as may be judged by the energy or debility with which any one or more function is performed, which does not obtain in diseases different, perhaps opposite, in their general character; and that as strength depends upon one state of the related agents of life, so debility must always ensue from a deviation from this state.

Another source of error, and we think the principal one in the pathology of Brown, is the manner in which it draws attention entirely to degrees of excitement in particular organs, or in the general system, instead of attributing any share of the cause to some alteration in kind—to some change in the vital manifestations different from degree, impressed upon a part or the whole of the system by the cause of disease. The consequences of this error—the exclusive reference of disorders to sthenic or asthenic states of the system, as they display conditions which he conceived to be above or below that middle quantity which he attributed to health, are not confined to and visible in his pathology only, but are banefully extended to and particularly manifest in the general and special indications founded on that basis; and, whether intimate views of the animal economy in health or disease, or the effects of medicinal substances, be referred to, the confined ideas which the doctrine inculcates, notwithstanding the beauty of its simplicity, become equally apparent.

We confess that our limits cannot allow us to enter fully and adequately into the merits of the pathological dogmata of the doctrine of Brown; nor would we have occupied so much space with its consideration, but that we know, that several of its terms are still retained in medical reasonings, and frequently employed without any definite meaning being attached to them. With a similar impression to our own on this subject, Dr. Pring enters upon an elaborate, but, we think, not happy discussion of the question, as to the degree of excitement or of power with which functions are exercised; and, at this place, he examines very fully the distinction between degree and quantity, a distinction which ought not to be lost sight of in our speculations respecting the vital operations. After stating and illustrating the distinction, which will be obvious to most of our readers, he considers the relations of each of these terms individually, and afterwards views them as they are related to each other. Here, also, the author is always profound, but frequently obscure. We refer our readers to his exposition of these topics; they do not admit of abridgment.

Dr. Pring proceeds next to examine, at considerable length, the pathology of Brown with reference to its application to the

doctrine and treatment of fever. The views which he discloses, in the course of this inquiry, are clear, just, and comprehensive: we recommend them to the attentive perusal of our readers, on account of the very excellent and practical principles which he has deduced from them, and which he has illustrated, from his enlightened experience, in a manner that will interest every practitioner, whatever pathological dogma or practical precept he may entertain.

Our limits cannot allow us to give such an account of Dr. P.'s observations at this place as would convey a satisfactory idea of them, and we are unwilling to compromise ourselves or our author, in the opinion of our readers, by stating them in an inadequate manner; we, therefore, refer them to these ample and practical remarks, to which we now allude, and with which Dr. Pring has concluded his examination of the doctrine of Brown.

[The other chapters of this work to be analysed in the next number.]

Cramer *on Strychnium.**

(From the Quarterly Journal of Foreign Medicine and Surgery, for July, 1823.)

Strychnium was first prepared by M. M. Pelletier and Caventon, from the bean of St. Ignatius, and from nux vomica, both of them the kernel of the fruit of two species of the genus strychnos, a shrubby tree, growing on the banks of the Ganges, and in the Asiatic islands of Borneo, Sumatra, Ceylon, &c. It is from some other trees of this genus, as yet not very well known, that the snakewood of the old apothecaries is produced, and the upas tieuta, of which so many wonderful stories have been told. The qualities and *virtues*, as they are called, of nux vomica have been long known; and in Woodville's Medical Botany, but more particularly in Murray's Apparatus Medicaminum, the reader will find a very full account of them.

An account of the chemical qualities of strychnium will be found in the works of Pelletier, Caventon, Kustner, and Buchner. We shall merely observe that its taste is intensely bitter; that it exhibits very minute crystals of a quadrangular form; and when exposed to heat gives out an empyreumatic oil, acetic acid, carbonic and hydro-carbonic gas, leaving behind a considerable quantity of carbon.

In preparing strychnium, the author employed the following process, which is similar to that of the celebrated Pettenkofer. Forty-eight ounces of nux vomica, after being washed several

* Strychnii vis ac efficacia in corpus animale, auctore Theophilo Cramer. Bonnæ.

times in water, were steeped for forty-eight hours in a quantity of it, equal to their own weight, and then cut into small pieces; and a quantity of cold water of double that weight being poured on them, they were softened for twenty-four hours longer, and frequently stirred with a spatula, and then passed through linen. The same process was followed with what remained on the strainer, and with the same quantity of water. This operation having been once repeated, hot water was poured on the seeds, which produced little more effect on them than the cold water had done; the nux vomica retained a very intense bitterness even after the maceration. The liquors obtained from the cold and hot infusion were then mixed, and boiled down to the quantity of thirty-two ounces. Into this fluid, which was brown and muddy, the liquor of caustic potash was dropped, so long as any thing was precipitated. Whilst this was going on, there was first an ammoniacal smell, which was afterwards changed into the smell of ox gall. The precipitated matter had the appearance of a powder, but soon assumed a crystalline form. After the sediment had remained at rest for twenty-four hours, it was separated from the limpid fluid, which had an alkaline taste; and being then put upon a filter, and any remains of the liquid being carefully removed, it was then dried. This mass afforded strychnium in conjunction with fibrine and colouring matter; for it was yellow, and its weight was four drachms, and when it was dissolved in three ounces of hot spirit of wine, a brown sediment was deposited, which weighed two drachms. When the spirit of wine of the solution was removed by a gentle heat, the strychnium appeared of a crystalline form, of a reddish yellow colour. When the red fluid was removed, the strychnium was several times washed with water, and being then dried with a moderate heat, its weight was 120 grains, exactly what Pettenkofer had obtained from the cold infusion.

Dr. Cramer found, that by dividing the nuces vomicæ into very minute pieces, by steeping them long in hot water, and bruising them repeatedly in a mortar, he could extract much more strychnium from a given quantity of the article, than he obtained by the above process, but by no means so as to repay him for the additional trouble and expense; but, in preparing strychnium from a watery infusion, he recommends that hot water should be used in preference to cold, and that the nuces vomicæ should be divided into as minute particles as possible.

With strychnium prepared in this manner, the author, in order to ascertain its powers, made various experiments on frogs, birds, and quadrupeds. To kill frogs he made use of a spirituous liquor, fifty drops of which contained one grain of strychnium. A very minute quantity of this solution, in whatever way it was applied to the frog, produced convulsions; but those

were much more violent when the application was made to the heart, and spinal marrow or brain. To ascertain whether the heart or spinal marrow, when touched with strychnium, propagated convulsions with most rapidity, he made the following experiment: the spinal marrow of frogs of the same kind and size, being as much as possible laid bare, some drops of the poisonous solution were poured upon it; and the same thing was done at the same time to the heart of other frogs, after the thorax and pericardium had been removed. Spasmodic movements appeared in both, but much sooner in the latter.

The subject of the next experiment was a young unfledged sparrow. A wound was inflicted on the upper side of its leg, into which a few drops of the spirit of strychnium were poured. In a few seconds the animal was attacked with convulsions, which gradually increased in violence. The breathing was at first laborious, and then seemed to cease altogether. Universal tetanus ensued; and when this went off, the animal appeared to be completely paralyzed; but from the brightness of its eyes, it was thought not to be quite dead. This state lasted for one hour, at the end of which the creature was left for dead; but in a few hours the sparrow was heard chirping merrily, and when it was examined the wound was found quite dry.

Twelve drops of the spirit being put into a pigeon's mouth, the bird was violently convulsed, and died in a few minutes; and being dissected, the surface of the brain, cerebellum, and spinal marrow, was found suffused with blood, and the right and left ventricles of the heart were full of coagulated blood. One drop of a fluid, which consisted of twelve grains of strychnium, six grains of muriatic acid, and 262 grains of distilled water was put into the left eye of a pigeon. The pupil was immediately contracted. The creature wandered about, but in five minutes fell to the ground, extending its tail, feet, and wings, bending its head back, and panting for breath; its heart at the same time beating with great violence. Three minutes and a half after this it died, the pupil of its eye being still more contracted. After it had been two hours dead, the pigeon was dissected. The heart was full of blood; its right auricle beat when stimulated; there was not much blood in the brain, but the surface of the cerebellum was injected with blood; as were also the coverings of the optic nerve. In the spinal marrow there was no change whatever. A quarter of a grain of powdered strychnium was put into a chicken's eye, but, although it occasioned convulsions, it did not kill the animal.

Ten drops of the spirituous solution of strychnium were thrown into the rectum of a young puppy dog. The creature wandered about very uneasily, and evacuated its urine and fæces. In six minutes it was seized with violent tetanus, and frequently

moved its under jaw, and much saliva ran from its mouth. It died in a quarter of an hour. On dissection, it was found that the inner surface of the lower portion of the rectum was much redder than that of the upper portion. The blood in the left ventricle of the heart was found coagulated. The brain was full of blood, but the lungs were not. The lower part of the spinal marrow was red. The eighth part of a grain of strychnium being put into the eye of a young dog, it became convulsed, and died in ten minutes. The effect produced on cats was neither so violent nor so suddenly fatal. Three drops of the solution of strychnium, which contained muriatic acid, were put into the mouth of a kitten four days old. In two minutes the hind legs were in a state of tremor; the body was rolled upon one side, and the creature was seized with spasms, which lasted for some time with greater or less violence. The lower jaw was often moved upon the upper one. The pulse was quick; the abdomen hard and tense. In little more than three hours the kitten died. On dissection, the vessels of the brain and spinal marrow were observed to be unusually full of blood, and particularly in the upper part of the spinal marrow; yet there seemed to be no want of blood in the lungs, heart or bowels. About a drachm and a half of a muriated solution of strychnium was poured into the mouth of a kid. Soon after, its limbs were becoming stiff, its pace slower, and its hind legs were moved with greater difficulty. The animal trembled and became uneasy, and in ten minutes after the poison had been administered it fell to the ground, and was attacked with severe spasms, which were increased when its body was even slightly touched. The pulse could not be counted, the breathing also was much hurried. The pupil was at first contracted and afterwards dilated. There was then a remission of the spasms, during which the heat of the body seemed to be much increased. In about five minutes there was a fresh attack of spasms, and the eyes were distorted. The animal then died. The body was opened next day. In the ventricles of the brain were some black streaks, formed of coagulated blood. Nothing remarkable was seen in the spinal marrow. The ventricles of the heart were full of coagulated blood, but not quite so much so as the auricles. The lungs were in their natural state. Some part of the intestines had lost their natural colour.

When a drop of the muriated solution of strychnium was put into the eye of a rabbit, the pupil appeared to become smaller, and in little more than five minutes the limbs were seized with tetanic spasms, the head was drawn backwards, and the muscles of the face were thrown into violent action. In four hours the animal died. It was opened next day. The coverings of the brain were distended with blood; and at the place where the

convolutions of the brain approach the cerebellum, there was a black coagulum. In short, the brain, cerebellum, medulla oblongata, and that part of the spinal marrow which is covered by the vertebræ of the neck, were all tinged with blood; and the optic nerve of the eye, touched wth the poison, was much redder than the other. Several other experiments were made with rabbits, in which nearly the same phenomena occurred as in the above. In rabbits, the spasms were always increased when any thing irritating was applied, or even when air was blown upon them. The brain and spinal marrow, on dissection, were not always turgid with blood; in some cases they even seemed to contain very little. The eye of the rabbit appeared to be uncommonly sensible to the poison, much more so than any other part. The poison also affected, and very soon killed, a pig and a mouse.

From the above experiments, and those of Pelletier and Caventon, it will be readily allowed that this substance is one of the most violent and most powerful narcotic poisons. But its power seems to be greatly increased when it is joined with muriatic acid; and Hahnemann, before the discovery of strychnium, had shown the fallacy of the opinion that acids are the antidote of nux vomica; for he asserts, that he had seen its poisonous effects increased by the use of lemon juice. But, he observed, that camphire, when given to dogs which had swallowed nux vomica, had a very beneficial effect in counteracting the poison. Pelletier and Caventon recommend morphium, or opium, as an antidote.

The author now proceeds to compare the powers of nux vomica, in so far as they have been observed and described, with those which Caventon, Pettenkofer, and himself, had observed in strychnium, in order to ascertain whether the virtues of the nux vomica depend most on the strychnium which it contains, or upon any other of its ingredients. Even the older physicians have endeavoured to find out and examine by experiments the qualities of nux vomica. Antonius de Heyden gives the case of a dog as affected with this drug, and informs us that it was seized with anxiety, shivering, trembling, convulsions, and hurried breathing. Then Wepfer, and many other authors, have narrated experiments which they have made with it. Very lately, Desportes, a French author, has given an account of its chemical, physiological and medical qualities, with various experiments which he made on fowls, dogs, and frogs. But these, and others made by Magendie, Delille, and Lesant, will be found in Orfila's work on poisons. Senter informs us, that he saw a woman who had taken nux vomica, with a view of curing an ague, seized with dreadful convulsions, producing numbness in almost every part of the body, which probably would have

proved fatal, if an alexipharmic remedy had not been speedily administered. In Hahnemann, and other writers on the materia medica, many curious remarks will be met with on this subject. The author, in a note, has referred to these writers.

From all this it must be evident that strychnium is the real cause of the narcotic and poisonous quality which exists in nux vomica, and also, if we believe Caventon and Pelletier, in the bean of St. Ignatius, and in snakewood. Indeed, none of their other ingredients possess qualities in the least resembling those of strychnium; and so far from adding any thing to its activity, they very materially lessen it.

From the experiments of various authors, and particularly of Mayer, it would appear that strychnium and its deleterious narcotic quality act upon the animal economy, not through the medium of the nerves but of the vessels, and what, perhaps, by some may be doubted, the vessels which carry blood. But the poison is also absorbed by the lymphatics, and may be mixed with the blood without passing through the thoracic duct, a circumstance which has been explained by Professor Harless, of Bonn. But we may ask, are the internal parts of the body, which suffer most from strychnium and other poisons of a similar kind—are they, and more particularly the spinal marrow, purely nervous, as many think? M. Cramer is inclined to think that they are not. Sensation, indeed, which depends upon the nerves, is comparatively little affected by the poison. Besides, the specific affection of individual nervous parts, which some are inclined to attribute to that poison, does not appear by any means to be yet proved; as the experiments, carefully instituted for that purpose, show only that no severe spasms can take place, unless the spinal marrow be entire; because it is necessary to life, and to the action of irritable organs.

It appears reasonable then to believe, says M. Cramer, that strychnium acts principally upon that vital function which is called the irritability of Haller, a principle inherent in the muscles, and which depends upon the influx of nervous energy; for strychnium produces contractions of the muscles, and at the same time affects the blood in a peculiar manner, and greatly changes it; but not so much so, it would appear, as to render it a poison to other animals. But it has not yet been ascertained whether any of the other secreted or excreted fluids may be contaminated by it. It appears, however, that the urine has been impregnated by the angustura virosa, and the amarita muscaria.

The author now takes a general view of the post mortem appearances; but these we have already taken notice of in our account of his experiments. We may observe, however, that the blood is generally found to have deviated a good deal from

its natural colour, and to have lost much of its firmness. When strychnium has occasioned death, it appears to have done so by inducing apoplexy; but in the greater number of cases, death appears to have been the result of palsy, brought on by previous over-excitement of an irritable system, and to have been hastened by the breathing becoming laborious and torpid. It is to be hoped that strychnium, from being a poison, may yet become one of the valuable remedies of our art. Magendie lately found it of great use in the case of an old man affected with muscular debility. Dieffenbach, a friend of the author's, informed him that it had afforded considerable relief in a paralytic affection.

Scarpa *on the Recto-Vesical Operation.**

(From the same.)

Although we have little fear that the so called recto-vesical operation of lithotomy should meet with general approbation as a substitute for the improved lateral one, yet we imagine that we shall afford some gratification to our readers, in laying before them the sentiments expressed on the question by one of the greatest ornaments of modern surgery.

Most worthy Friend,

You ask me whether the recto-vesical operation of lithotomy has many followers in Italy?—To what degree of perfection it has been brought?—And what my own opinion of it is? As to its advocates, I may tell you that with us their number is very small; and as regards its convenience and utility, I will freely tell you my mind, or rather give you the reasons on which my preference of the lateral operation is grounded. At the end of my memoir on the hypogastric operation, you must have remarked the reasons which led me to think that when the stone is large, the high operation is not only useless, but also fatal to the patient. From the same motives, I am of opinion that when the stone is of an unusual size, no advantage, but on the contrary injury, is to be expected from the recto-vesical operation, as in such circumstances the unsuccessful event of an operation depends not so much on the facility or difficulty of the execution of any particular method, as on the diseased state of the coats of the bladder caused by the prolonged presence of a large calculus.

I admit that a bulky calculus may indeed be extracted more speedily, and with less risk of injury to important parts, by

* Lettera del Professore Scarpa al Professore Maunoir sul Taglio Retto-vesicale per l'estrazione della pietra.

opening the lower part of the bladder from the rectum, than by the high operation; but besides that in such cases every kind of operation is contra-indicated, in that by the rectum there remains, after the removal of the stone, a permanent passage for the fæces into the bladder, and for the urine into the rectum. Of three individuals, within my knowledge, on whom this operation was performed for the extraction of large calculi, two soon died of gangrene of the bladder, and the third dragged on a miserable existence for some time, discharging fæcal urine and urinous fæces.

Instructed by these failures, some Italian surgeons endeavoured to remove their causes, and having ascertained that, in order to extract a calculus of moderate size, it was unnecessary to cut the lower part of the bladder, they adopted the method proposed by Sanson, which consists in dividing the sphincter ani from below upwards, and opening the membranous part of the urethra and the prostate from above downwards. By this measure they certainly attained their object, viz. that the fæces did not enter the bladder after the removal of the stone.

This method was of considerable importance to their proposal, but, in my opinion, not so much as to render the recto-vesical operation preferable to the lateral; and that for the following reasons;—First, because the vertical section of the membranous part of the urethra and of the prostate cannot be made without separating the left common seminal duct from the vas deferens and vesicula seminalis of the same side. Secondly, because the fæces cannot be prevented from entering the wound.

I cannot speak precisely as to the injurious consequences of the division of the left seminal duct. Until experience shall have given us positive information on this point, I may be allowed to make some suggestions on the probable event of such an injury.

In children the seminal ducts are small, and kept pervious by an aqueous vapour rather than by distention from fluids. Hence to me it appears very possible, that, during the adhesive inflammation of the prostate, the divided orifices of one or both ducts might be filled by effused lymph, and either contracted or obliterated in the cicatrix of the prostate. This might not recur in adults, or not so readily, but probably the division would give rise to a fistulous opening. In this case it is unlikely that the fistulous opening should be capable of performing the peculiar functions of the natural orifice of the common seminal duct. It is well known that the orifice of every excretory duct has a particular direction at its opening into any of the cavities of the body; that it has a particular structure and a mode of sensibility peculiar to itself, by which it regulates the effusion of the fluids transmitted to it, at one time hindering, and at another

facilitating their passage. Instances of the inconveniences arising from the injury of such parts, present themselves in the stenonian and in the lactiferous ducts; and many cases of constant seminal flux from corrosion or obliteration of the natural orifices of the seminal ducts are related by Morgagni, Epist. XLIV. 16, 17; by Heers, Obs. Rariores; Acta. Med. Berolin, T. IV. Dec. 1: Comment. Lips. T. XXIV.; by Sauvages, and others.

Besides the loss of one half of the ejaculatory apparatus from the obliteration of the orifice of one of the seminal ducts, the same consequences must be expected as in the case of ligature of the excretory duct of a gland. Viberg, a veterinary professor, twice found in horses the duct of the parotid closed by the inflammation succeeding to a wound; and in a third, having purposely tied this canal, found that the parotid at first became tumid, but gradually ceasing to secrete, sunk away, and fell into a state of atrophy. (*Effemeridi Fisico-Med. No.* 3, *Milano*, 1804.) From such facts, it is to be feared that the same thing would happen to the left testicle from the obliteration of the left seminal duct.

But this is not the only method in which the function of the seminal duct may be impeded by its division. The citacrix of the prostate and caput gallinaginis may cause the orifice of the seminal duct, although pervious, to deviate in such a manner as not to correspond with the direction of the urethra. La Pergronie (*Acad. R. de Chir. Vol. II. in* 8*vo. p.* 318) has related the case of a man, in whom such an affection was the consequence of a neglected gonorrhœa: he had lost the power of ejaculation, the seminal fluid slowly escaping after the act of coitus had terminated, and without the sensations usually attendant on emission. Having died from an accidental cause, the penis was divided along the dorsum to the neck of the bladder, when a cicatrix was found on the caput gallinaginis, causing the orifices of the seminal ducts to deviate in such a manner that they were directed to the neck of the bladder instead of the orifice of the urethra.

And here I will call to your recollection that almost all surgical writers, in speaking of cicatrices, and injuries of the seminal ducts, causing impediment to their functions after lithotomy, inculpate the Celsian operation when badly performed; the incision, in such cases, which ought to be made laterally in an oblique line from the pubes to the tuberosity of the ischium, as in the lateral operation, being carried in a line almost parallel to the raphe of the perineum, very nearly the same at present employed in the recto-vesical operation. Tolet (*Traité de la Lithotomie*) gives a proof the consequence of the ignorance of those who performed with the minor apparatus, telling us that

he had several times seen the rectum vertically divided in this operation. Now, whether the calculus were propelled into the beginning of the urethra by the finger introduced into the anus, or whether it was compressed against the neck of the bladder, and not sufficiently inclined towards the ramus of the left ischium, by a vertical incision of the perineum penetrating into the rectum, the left seminal duct would be inevitably injured in the first case; in the second, the left vas deferens and vesicula seminalis. Heister, a warm advocate of the apparatus minor, admits the great probability of the second kind of injury in the circumstances abovementioned, if the prescribed rules be deviated from. Callison, on the same subject, says, "vesiculæ denique seminales, vas deferens, ac ductus excretorii facile lædunter."—(*Vol. II. p.* 600.)

Is there not, then, an evident resemblance between the recto-vesical operation and the apparatus minor when improperly performed? And is it not rational to expect the same inconveniences in the one as in the other case?

As to the wound, although it comprises but a moderate extent of the upper side of the rectum, it is still constantly in contact with the fæces, particularly if there be diarrhœa, or if it be necessary to administer purgatives or clysters. To cure the wound speedily, say the advocates of the operation, it should be daily rubbed with the nitrate of silver. This is as it should be: it is unnecessary to take much trouble to discover the necessity of such a painful treatment; for, in order to avoid the inconvenience arising from the irritation of the fæces, such as swelling, fungus, ichorous discharge, &c., it is evidently necessary to create and keep up a crust on the surface of the wound.

To recapitulate what I have already said, the recto-vesical operation would be the best of all the modes hitherto proposed for the removal of a stone of unusual bulk, if it were not for the contra-indication to any operation, in such cases, from the state of the bladder; and to this one in particular, from the communication left between the bladder and rectum. When the stone is of moderate size, the recto-vesical operation, even according to the method of Sanson, cannot be substituted with advantage for the lateral one, because it cannot be performed without the division of the left seminal duct, or even of both, if the groove of the catheter be directed to the right side; and if, as is often the case, they run parallel to, and in contact with each other previous to opening on the caput gallinaginis. The certainty of not wounding the pudendal artery is not an advantage of the recto-vesical operation exclusively. The dread of such an event no longer occupies the minds of our operators, now that they are familiar with anatomy, and skilled in the use of the scalpel. For those who are less dexterous, surgery has pro-

vided simple instruments, with which, following equally simple rules, they may safely divide the prostate laterally, without fear of injuring the spermatic vessels, the pudendal artery, and still less the rectum; facts proved, by the daily experience of the most illustrious surgeons of all nations.

I shall conclude, by a reference to a singular reverse in the operation of lithotomy. In 1745, a period at which the most celebrated surgeons combined in the endeavour to bring it to perfection, Islemann, under the presidency of Heister, or Heister himself, published a dissertation, (*Dissertatio de Lithotomiæ Celsianæ præstantia et usu*) in which he attempted to prove the Celsian method preferable to any other. In our own times, an effort is made to persuade us that the lateral operation nearly at the highest point of perfection, is inferior to the recto-vesical, which in certain respects, is still more imperfect than the Celsian.

In these reflections, I have no intention to censure or misinterpret the motives of those who attempt to improve the old processes, or to introduce new ones, adapted to the changes of circumstances; but on such subjects, it is right to remember the maxim, "Nisi utile et quod facimus, vanum."

With the most perfect esteem and friendship, I am, &c.

A. SCARPA.

Leçons sur les Epidémies et l'Hygiene publique, faites a la Faculté de Medecine de Strasbourg. Par FR. EMM. FODERE, Professeur a cette Faculté.—Pp. 523. A Paris, chez Levrault, 1822.

(From the London Medical and Physical Journal, for Aug. 1823.)

Although we much doubt whether the best executed work that the present state of our knowledge of the laws of epidemic diseases could produce, would really be of so much importance to mankind as might at first be imagined by those who have not considered the subject very deeply, we intend to give as extended an analysis of the labours of M. Foderé as our limits will permit: he is already well and favourably known to the profession by former productions of the same kind; and our doubts of the utility of such a work by no means arise from any apprehension that the subject will lose any thing of its importance in his hands. The volume before us is only one-third part of a great work, of the origin of which our author gives us a short account in his preface. It appears that the lectures upon Epidemic Diseases at Strasbourg, which were interrupted by the retirement of M. ROCHARD, were, by a decree of the Royal Council of Public Instruction, united to the chair of Legal

Medicine, of which our author being professor, he determined to treat of this subject at length, as he had formerly done that relative to Medical Jurisprudence. In the month of March, 1822, having made great progress in his undertaking, he published a prospectus, requesting the assistance of his medical brethren to enable him to print this work, which he considered as indispensable. Unfortunately, this appeal scarcely produced him one-fourth of the subscribers necessary to effect his purpose; and we must therefore forgive him a few cynical remarks and a little grumbling occasioned by this disappointment. The first volume is therefore printed chiefly at the author's expense, and will be followed by two others, which are ready for the press, and will be published provided encouragement is given to the present one.

M. Foderé, like all authors, declares he has no intention to praise his own book, but that, as he has no system to defend, he has sought for the truth wherever he could find it; praising and blaming without hatred or envy, and with freedom and impartiality. Our readers will be able to judge hereafter whether M. Foderé is really the impartial and unprejudiced person he believes himself to be, or whether all the varieties of the passion love (including self-love) are not equally blind.

The volume before us is divided into three principal parts, or sections, prefaced by some general remarks, which occupy forty-three pages. The first section contains seven chapters, extending to nearly one half of the book; the second section has also seven chapters; and the third, which commences with the description of the epidemic diseases *seriatim*, consists of two chapters only, each disease occupying one chapter. The aphoristic form which is adopted throughout the work, renders the task of analysis still more difficult. In a work which is evidently intended to be a complete treatise on the subject which it professes to treat, we must, of course, expect to commence *par le commencement*.

"It will not be imagined (he says,) that the ancients were without a knowledge of public hygiene. Who would believe, that in the time of those who constructed the zodiac of Denderah, that observations were wanting as to what was necessary for the preservation of health? The twenty thousand cities of Egypt would be a sufficient reply to such an absurdity. Tyre, Sidon, and the old Cyrene, which for a long time commanded the respect of nations, were strong, as much by their sanatory laws as by the boldness and intelligence of their inhabitants. The chiefs of these societies, who knew the carelessness of the people, gave to their laws the seal of religion." (p. 2)

Forests placed so as to intercept the exhalation of marshes, —the salubrity or insalubrity of different places, as denoted by the inspection of the entrails of victims,—divine honours ren-

dered to the Nile and other rivers, are so many proofs adduced by our author of the good sense of the nations of antiquity. Nor does it appear that the savages of the New World were less instructed as to the general advantages or disadvantages of particular districts relative to health, as they pointed out to Cortes the insalubrity of Vera Cruz, and to the Portuguese that of Pernambuco. These simple elements of medical knowledge, however, have given rise, in later and more refined times, to so many systems and to so many controversies, that truth has entirely been lost sight of, and the noble science of medicine been exposed to unmerited ridicule and obloquy. Our author goes on to give a rapid sketch of the different sects that have succeeded each other in the career of error, until the seventeenth century produced a revolution in philosophy generally, and led the way, through careful observation and an attentive study of the operations of nature, to a safe and more rational practice.

Our author, after some sensible remarks on the spirit of system which has, and ever will, we fear, prevail among the professors of our art, turns towards the particular subject of his work, and enumerates the principal authors who have written upon epidemic diseases during the last three centuries, beginning with Mercurialis, and ending with those works which the recent visitations of the yellow fever in Europe have made so familiar to the profession. "Materials then are not wanting (says M. Foderé); but we make bold to say that what is really wanting is a good criticism, an accordance of opinions, a stop to the spirit of party and faction, a good choice among so many contradictory opinions with which ancient and modern medicine is encumbered, and the establishment of a distinction between what is only supposed or marvellous, and what is real." (p. 12.) In these sentiments we entirely concur; but we do not see the necessity of reverting, upon all occasions, to the writings of Hippocrates and Galen to prove the truth of these assertions: we may come much nearer to our own time and country for an illustration, and we need only allude to the controversy regarding the Barcelona fever, to show that all the elements of a sound doctrine are as much a desideratum now as they ever were since the beginning of the world.

In recounting the various mistakes that have been made relative to the once favourite doctrine of the epidemic constitution of the air, M. Foderé mentions, in particular, the opinion of Sydenham with regard to the plague of London in 1665, and which that able physician, certainly very weakly, ascribed to the occult qualities of the air.

Our author, before he begins to state his doctrines, undertakes to root out some prejudices which have necessarily arisen from a belief in this unknown atmospheric influence; and, in

the first place, remarks that the division of maladies affecting a population into epidemic, properly so called, and epidemic constitutions, and the refinements upon these distinctions, have been fraught with mischief, and from which some of the best modern writers have not been exempt. Our author instances the celebrated Frank, who believes that an epidemic has something particular in its nature, which, for instance, forbids the repetition of bleeding, or regulates the quantity of blood to be taken away, even in those diseases which are purely of an inflammatory nature. "Experience, however, proves (M. Foderé goes on to say,) that what is really inflammatory is always so, and requires an antiphlogistic treatment accordingly. It is true that in certain epidemics there is a mere appearance of inflammation, which does not always forbid bleeding, but which occasionally does so: we shall see, however, that this appearance is the effect of a principle analogous to that which produces malignant fevers (*fievres pernicieuses*,) and those diseases mentioned in our fourth section, and which consequently requires a treatment different from pure inflammation: but this principle is sufficiently known, and has nothing in common with the abstruse elements of the compilers of the doctrine of epidemics." (p. 19.) We shall merely remark upon this passage, that, from whatever cause it arises, we do not pretend to determine, but that nothing can be more certain than the very peculiar and marked character which diseases assume at some seasons, more than at the corresponding seasons of former years; and that the practitioner, whether he believe that such peculiarities are dependant upon atmospheric phenomena or not, must adopt and modify his practice to the circumstances of the time. The past winter in London affords a very fair illustration of the truth of this remark; and few practitioners, we conceive, will deny that the inflammatory affections that have been so prevalent have not demanded a different mode of treatment to that usually adopted, and that evacuations (particularly by the lancet) have not been so eminently and promptly successful in subduing the affection as has been generally found to be the case.

The second prejudice mentioned by M. Foderé is, in fact, the offspring of the first: it is, that an epidemic constitution puts an end to all other maladies, and which do not appear again until the epidemic has entirely ceased: to this we can have no objection. The belief in the possibility of contracting the germ of a disease in one season, and which shall only make its appearance in a succeeding one, is now so generally exploded, that we may be permitted to pass on to the fourth and last *prejudice* mentioned by our author, and which refers all diseases to some sudden change or instability of the weather.

This leads him to consider the little assistance which our art has derived from the study of meteorology; for, although valetudinarians and delicate people are sensible of these influences, they have absolutely no power over the bulk of mankind, or, at best, can only be said to predispose these patients to some particular disease.

We come now to the definition of an epidemic, which is described to be a "certain malady very much diffused in consequence of one or more common causes, and of a predisposition to contract it, with which a number of individuals are furnished." The author before us evidently dwells more upon this latter circumstance (the predisposition of the patient,) than has usually been the case; and it forms, indeed, the principal feature of his opinion, and which appears to be much confirmed by observing the infrequency of these visitations now, compared with the preceding ages. "It is evident (says M. Foderé,) that the condition of humanity is ameliorated; for, since the system of the universe is not changed, and the atmosphere remains the same as in the first epoch after the creation, it is evident that there is nothing in the air above the scope of the human understanding or power. That which has been removed is filth, contagion, unwholesome habitations, bad food, and poisonous beverage." All this is true; but might not the cultivation of the earth, the clearing of forests, the draining of marshes, have also been dwelt upon, or at least enumerated; for, though the atmospheric air may be every where nearly the same, still its impregnations have been, and continue to be, frequent and fatal causes of epidemics, unless we are very widely mistaken. If there be difficulty, however, in searching into the essential causes of epidemics, the mode of treatment has been rendered not less difficult by the various systems and theories that have succeeded each other with such rapidity. To some of these M. Foderé alludes. Pringle, in consequence of certain experiments, introduced the practice of antiseptics. Stoll, believing every disease to arise from an epidemic bilious constitution, advocated the use of emetics in all cases. Brownism let loose upon the world a host of stimulating and exciting medicines; and latterly every thing has been referred to irritation, and depletion has become the order of the day. In this uncertainty, well may our author exclaim, "Combien je plains le jeune medecin qui debate dans une épidemie, et comment je plains encore plus ses maladies! Cependant l'on guerit et l'on meurt avec toutes ces methodes." (p. 35.)

Let us turn now to something more satisfactory, and enumerate those circumstances which our author declares to be essential to render the history of an epidemic perfect and complete.

First, is the topography of the place; comprehending, be-

sides the nature of the soil, &c. the construction and situation of the houses, the number of inhabitants, their manner of living, &c.

2dly. The climate, state and temperature of the air, the direction of the winds; and, if you wish to be very scientific, says our author, the state of the barometer, hygrometer, and thermometer, may be added.

3dly. The nature of the reigning disease, with its leading symptoms, their mode of accession, progress, and decline: in short, all the particulars usually considered indispensable to be known on these occasions.

4thly. The natural cures, as well as those produced by the medical treatment first adopted; together with that plan of cure which is considered most judicious.

5thly. A description of the origin and causes of the disease, whether it is simply an epidemic, or contagious also.

6thly. The methods of health proper to bring the epidemic to a termination, to diminish the contagion, or to confine it within certain bounds, &c. &c.

This enumeration comprises, pretty exactly, the whole plan which our author intends to follow in treating his subject, which he divides into eight sections; the two first being consecrated to the causes of these diseases, and the last six to the description of the numerous individual maladies, the methodical division of which will be found at the end of the first section, and upon which we shall have occasion to make a few remarks.

The nature of the preliminary matter of this work has necessarily compelled us to bestow more space upon this part of our subject than we had originally intended; but we now hasten to the first chapter of the first section, and which is thus entitled, "*On the Knowledge of Places, with respect to their Salubrity or Insalubrity.*" The subjects comprehended under this head are numerous, including the nature of soils, the direction of winds, the situation of forests, mountains, rivers, and marshes; whether the soil is alluvial or not; the temperature of the air, its dryness or humidity: after which come the sources of disease consequent upon civilization, such as those arising from manufactures, from a crowded population, from slaughter-houses and other nuisances, especially from burying-grounds in the vicinity of large cities.

With regard to the nature of soils, we find two important facts insisted on,—the fatality of the banks of large rivers, and of all those lands formed by the detrition of large bodies of water, and which are fatally shown in the instances of New Orleans and Walcheren; and, secondly, the unhealthiness of argillaceous soils above all other, and which retains and decomposes the moisture which it imbibes. But a slight acquaintance

with mineralogy, says our author, will be sufficient to enable us to judge of the nature of the soil, and which an observation of the plants which grow upon it, and of which some examples are given. It is from this source that the Oases of the Arabian desert are insalubrious, as well as the desert itself at particular periods, and the sand of which covers a bed of argillaceous earth. We need not dwell upon the unwholesomeness of the vicinity of stagnant waters, especially if containing decayed animal or vegetable matter. Neither do we find much to detain us respecting the influence of those noxious effluvia with which the atmosphere itself is sometimes loaded. Our author's remarks are generally judicious, but they are not new,—neither do they aspire to the merit of novelty: and the same remark applies to what he says relative to general heat, humidity, electrical phenomena, and general direction of the winds. He quotes with approbation an observation of Sir G. BLANE's, that the violent operation of marsh effluvia has a relation in general to the heat of the climate, and which are more fatal in Zealand than in England, and still more so at the Equator, than in Zealand.

We pause at page 61, and quote the following passage:

"In general, it is of the highest importance to fix our attention upon the nature of the predominant winds of a country, and upon their mode of acting upon the principle of life, for this action cannot be dissimulated; and, consequently, the winds contribute materially to form the climate, considered in a medical point of view. *That disgust of life which has for so long a time been remarked among the English, is singularly favoured by the dark complexion* (ton rembruni) *of the atmosphere of their island, by the moisture and storms which are permanent; and that the number of suicides is greater at London during the blowing of the east wind, which is sufficiently common in England, according to the testimony of Lind.*"

We really feel mortified at having met with so silly a passage in a book which contains the sentiments of a public teacher at a great university. Does not M. Foderé know that it is proved, as clearly as arithmetic can prove any point, that the number of suicides in London is inferior annually to that of Paris?—and, if atmosphere has to do with the question, why is London selected? We maintain, without fear of contradiction, that suicides in England, throughout *the country* generally, are not particularly frequent: and is it not more consonant to common sense and sound philosophy to attribute their occurrence in large cities to those agitating passions which there find their full development,—to the despair of the unsuccessful votary of fortune, the recklessness of profligacy, and the despondency attending sudden reverses of fortune, so frequent and so fatal in a commercial community?

Much has been said of the influence of the sirocco, or hot winds, in the south of Europe: our own personal experience leads us to believe that their inconveniences have been exaggerated, or, at least, that they depend as much upon the indolent habits and the mode of living of the natives as upon the wind itself; and certainly such effects as are described by travellers at Naples, Cadiz, &c. we have not experienced ourselves, nor observed in our own countrymen.

It does not appear that a continued rain, if the temperature of the air is low, is at all hurtful to the health; but, if the heat be great under the circumstances of long continuance of wet weather, severe disease is universally the consequence. The history of all hot countries abounds with fatal proofs of this truth.

"The country in general may be healthy, (says our author,) but there will be a cause of unhealthiness in some particular spot, and which will have been the cradle of the disease: thus, on one occasion, a putrid epidemic fever began from a deserter hid in a cavern, and who died of gaol-fever, which he communicated to those who succoured him. On another occasion, in a dry and healthy district, a violent epidemic broke out, in consequence of a body having been buried in a church too near the surface." (p. 67.) This is followed by an account of an epidemic which broke out in the neighbourhood of Nice, in a church yard placed on a rock, and the earth of which was not sufficiently deep to inter the bodies.

The remaining pages of this chapter we must pass over, although much of the matter is interesting; but we shall extract some rules which M. Foderé lays down as necessary to secure and preserve the body in those hot and unhealthy climates, the fountain and birth-place of marsh-fever: and, 1st, we are recommended to observe very strictly all the sanatory laws relative to church-yards, privies, slaughter-houses, manufactures from animal remains, hospitals, prisons, &c. 2dly. To protect ourselves as much as possible from all natural and artificial stagnant waters. 3dly. To oppose a barrier to winds that are unhealthy, and to open a free course to those which are found to be salutary; and, 4thly, To preserve to the inhabitants a strong and robust constitution, capable of resisting the causes of disease, or of repelling them by a salutary reaction. The means necessary to accomplish these desirable ends are easily to be comprehended; and the best commentary upon these rules generally, perhaps, is the reply made by the post-master of *Torre de tre Ponti*, in the Pontine marshes, to M. Ozanam, who was surprised at the perfect state of health which this man enjoyed in the midst of a situation the most deadly. "I have dwelt (said he,) in this place more than forty years, and I have never had the fever: the only precautions I take are never to

go out after the sun has set, nor before it is sufficiently high in the horizon, and to light a fire in the evening; I feed well, and drink wine; and that is the whole of my secret." In many parts of Holland, and in Zealand particularly, the precautions adopted by this sagacious post-master are precisely such as are found to be most efficacious in guarding the natives from the attack of that formidable fever which always prevails in that climate about the months of September and October, and from which the British army in Walcheren suffered so much.

Chapter ii. *On Solid and Liquid Aliment as Causes of Disease.*—We shall take the liberty of passing over, almost without comment, the first twenty pages of this chapter: it is filled with discussions that relate principally to the agriculturist,—the different soils proper for the growth of corn, the diseases which this class of plants is subject to, and their influence upon the animal economy, are noticed; as well as the invariable invasion of disease when the dearth of grain reduces a population to the precarious and unwholesome substitute of roots and herbs, as was exemplified at Naples in 1764, and more recently at Marseilles in the years 1812 and 13. Of course, the singular effects of the ergot are mentioned. With respect to animal substances employed as food, M. Foderé observes, that many epidemics have been common to men and animals; and that typhus especially has frequently reigned amongst horned cattle and the human species at the same period. In the year 1793, he says that a febrile dysentery was prevalent among the troops at Entrevaux, and which disease coincided with the arrival of cattle much over-heated, and affected with a discharge of bloody urine: in this state they were killed for the use of the troops; the flesh was very red, and went speedily into putrefaction. In 1799, in a village near Nice, a man died of anthrax, and his family were also very ill, in consequence of having lived upon the flesh of their cow, which died of the epizooty that prevailed at that time. So many accidents of this nature occurred during the epidemic among the cattle in 1744, that the exposing the flesh of these animals for sale was condemned by a decree of the parliament of Paris (p. 117). Many similar examples are given, and many arguments brought forward, in support of the principles maintained by our author on this point, and which have been controverted by many celebrated men. It appears to us, that, without attaching implicit credit to all the histories of epidemics which we hear of as arising from eating the flesh of diseased animals, that there is sufficient evidence to justify the exclusion of such food, and to render the enforcement of sanatory laws to that effect essentially necessary to the safety of every community.

The following remarks with respect to the effects of certain

kinds of water on the human constitution, appears to us to be interesting.

"Water, the specific gravity of which is lighter than ordinary, is frequently more hurtful to the health than hard water. Having remained for a long time in a marshy soil, or in one enriched by the remains of organic matter, especially over a clayey bed, such water is impregnated with these remains and with mephitic gases, which render it very light, and which, occupying the place of common air, render it warm and disagreeable to the taste, as well as to the stomach. The inhabitants of communes so situated have a cachectic exterior, are dull, and digest their food with difficulty. The cattle of these districts partake of the same imperfections, and are subject to the same diseases." (p. 129.)

M. Foderé adds, that in these situations, in the months of August and September, putrid, worm, and bilious fevers, are epidemic.

M. Foderé is of opinion that the tænia, and other species of worms, are the product of the water; and he instances certain parts of the department of Doubs, on the confines of Switzerland, where he has seen children of six years of age frequently affected with those diseases. Of all the hypotheses that have been invented to account for the presence of worms in the human subject, this which our author has adopted is certainly among the most probable; although the minuteness of the eggs of these insects, which are scarcely visible even by the assistance of a strong microscope, has given rise to the belief that they are to be met with in the circumambient air, and that they may even be transmitted from the mother to the child, through the medium of the circulation of the milk. At all events, it must be evident, in either instance, that a predisposition in the individual must be necessary for their development.

Although water alone would be sufficient for mankind where the nourishment is otherwise salutary, and the situation of the country healthy and dry, our author thinks that fermented liquors are universally necessary in northern climates, and where the atmosphere is moist: but upon this point, as well as every thing regarding the use or abuse of wine, he affords but scanty information.

We proceed now to examine the third chapter, on *the Seasons and Variations in the Atmosphere as Causes of Disease.*—We are now arrived at an order of causes, says M. Foderé, which has served as a pretext for the greater part of the popular maladies which have afflicted humanity from the time of Hippocrates. Without totally disbelieving in atmospheric influence, our author very justly ridicules the abuse of this doctrine as contained in the older writers; though, perhaps, he dwells too often upon a point which is not only indefensible, but is not,

that we are aware of, defended at present by any modern sect. It must be remarked, that the feelings excited by different states of the atmosphere, or the direction of particular winds, are only to be met with in the instance of delicate, feeble, and valetudinary subjects. It is also quite incontrovertible, we think, that certain maladies do really belong to particular seasons: thus, some of the exanthemata are found to be epidemic annually, at or about one particular period;—that, in this climate at least, the intestinal canal is the seat of summer disease, whilst the spring and winter more especially abound with pulmonary complaints. We cannot but think that M. Foderé has ascribed to particular seasons some diseases without sufficient grounds. What has dropsy to do with autumn? for example; or piles, or retention of urine?

We shall conclude our extracts from this chapter by giving, the result of the meteorological register kept by M. Brandes, professor at Breslau, whose diurnal observations amount to 180,000, and of which 70,000 were made by himself.—1st. The greatest degree of cold throughout Europe falls in the first days of January. 2d. To this generally succeeds a regular rise in the temperature, until near the end of that month, when a second return of cold ensues, and which reaches its height about the 17th of February. 3d. After this the cold decreases, and returns again, first in the eastern parts of Europe, then in the west and south, until the 9th, 14th, or 15th of March. 4th. After this the heat of the atmosphere rapidly increases; then for a few days it becomes more moderate; and then, in the southern countries, it uniformly increases from the end of March to the last days of April. 5th. The heat advances rapidly towards the tenth of May; but the warmth of the weather seems to be less regular every where about the beginning of June. 6th. The maximum of heat comes on sooner in the north than in the south: it appears to acquire two maximums, —one in the last third of the month of July, and the other from the 11th to the 16th of August. This is the common season of storms and tempests. 7th. A rapid and continual diminution of temperature begins in the middle of August in northern countries; but, in the beginning of October, this is usually suspended, and a latter kind of summer comes on: these alternations of heat and cold occur from the last third of October to the same period of November. In December, the diminution of heat in the northern countries is progressive: in the south, it is less evident in the middle of the month, but increases towards the end.

Following the arrangement of our author, we now come to a long critical examination of the different epidemic constitutions of authors, occupying nearly fifty pages, and constituting the

fourth chapter. The order in which he treats of these is, first, those epidemics depending upon the irregularity of the seasons; secondly, those called catarrhal; then the history of malignant, intermittent, remittent, or typhous fevers, which have, under different names, devastated Europe, and which are evidently connected with a *marsh* origin. The variety of the particular symptoms of these epidemics is great; sometimes accompanied with petechiæ, with miliary eruptions, or confined to certain classes of men.

The first observation relative to the constitution of particular seasons mentioned by our author, is the example of Modena, from the years 1689 to 1694, as detailed by RAMAZZINI. That author attributes the diseases that ensued in this interval, consisting of fevers, diarrhœas, and colics, solely to the irregularity and great humidity of the first three years, and to the bad harvests which resulted as a necessary consequence. Nevertheless, the heat of the country, and the quantity of stagnant water, cannot but have been the chief origin of the mischief which these unusually wet seasons produced. The next example adduced is that of Rome, in the years 1703, 4, and 5, in which earthquakes were very frequent in the Roman state, notwithstanding the seasons were not otherwise remarkable for any unusual variations in heat or cold, dryness or moisture; yet BAGLIVI assures us that, in the spring, ophthalmia and diseases of the skin were unusually frequent; intermittent fevers in the summer; and, in autumn, the small-pox, apoplexy, and sudden deaths, were of every day occurrence. The above-named writer very judiciously ascribes the principal number of these maladies to the continued alarms of the inhabitants,—to the quantity of salt-fish and other indigestible aliment,—and especially to the long and rigorous fasts which the inhabitants of Rome imposed upon themselves, for the purpose of diverting the divine wrath.

We shall not multiply examples, there are but too many; but from these it appears that there is no reason to ascribe the whole evil of an epidemic to the influence of the atmosphere. Bad seasons will produce bad harvests,—poverty combined with dearth,—a hot sun raising the exhalations from a soil overcharged with moisture, especially if encumbered with animal and vegetable remains: these causes combined *will give* rise to many formidable diseases, the particular character and symptoms of which will depend upon a combination of a number of causes, too minute to attract the notice of the philosopher.

We find it extremely difficult to make any selection from our author's remarks upon those catarrhal epidemics which have usually in this country been called influenzas, and of which

many examples are given. The years 1780, 1803, and the last winter, are the most remarkable of these. It does not appear to us that a warm and moist state of the air has been necessary to the production of this complaint in this island: on the contrary, is has rather been met with in seasons of rigour; not where the cold has been regular and permanent, but where the atmosphere has been liable to great and sudden changes. Upon the whole, this chapter, though filled with the fruits of much reading and research, does not afford us a sufficient number of data to enable us to form any conclusion likely to be of use to us under similar inflictions.

Chapter v. *on Infection and Contagion.*—This chapter begins as follows; "*Que l'auguste verité est difficile a trouver!* I seek for it in the palaces of kings, in the national tribunes, in the courts of justice, in academies, in the writings of philosophers, in the books of physicians. One would have hoped to have found it, at least, among this last class, whose studies are supposed to rest upon facts, and who, seeing human nature in all its nakedness, ought not to be occupied with a rivalry of places, honours, and of vain distinctions: alas! it does not appear to be made for them; and there is amongst our profession Guelphes and Ghebelins, Whigs and Tories, as well as among those who are busied only with politics or family interests." (p. 189.)—[By the bye, our author, like the rest of his countrymen, finds it totally impossible to spell any English word correctly: thus we have *wigs* for whigs, *Crisholm* for Chisholm, and *Raffler* for Raffles, the late respected governor of Ceylon.]—The medical world, continues M. Foderé, is divided into contagionists and non-contagionists, and it is necessary to be ranged on the one side or the other, in order to avoid the charge of imbecility, or from the fear of making both parties one's enemies.

This prelude almost immediately introduces us to the opinions of our author upon the subject, which are stated soundly enough, and with that sort of confidence which implies not only a thorough conviction of the truth of the doctrines he entertains, but something bordering pretty nearly upon contempt for those who maintain a contrary sentiment. We may guess at the impartiality of this gentlemen from his allusions to the last visitation of the yellow-fever at Barcelona. He strongly advocates the salubrity of that part of the coast of Spain; he appears to have the firmest reliance upon the report made by the French commission, which we have adverted to and exposed in a former number of this Journal; he quotes their authority as incontrovertible, little aware, we trust, of the ample contradictions that have been given to the principal part of their statements, and the absolute weakness,—nay, we may add, falsehood,—of most of the premises from which they drew their deductions. We

had much rather suppose M. Foderé to be ignorant of these counter-statements, than be obliged to believe that he has purposely omitted to notice them. Our readers need not be under any apprehension of our so soon renewing a controversy which we entered into so fully in one of the latter months of the preceding year: we shall only make one or two remarks, that arise out of the dogmas of the author before us, and which we would fain hope that we are only induced by a love of impartiality to submit to the consideration of our readers:—we trust that this is our motive; but, after what we read of and witness every day, we dare scarcely venture to affirm it positively. We were rather startled to find M. Foderé reproaching MM. Deveze, Valentin, &c. for denying the contagion of yellow fever at New Orleans, and which, he (M. Foderé) says, is acknowledged by the physicians of that place. Now, so far from this being the fact, we know that quarantine has been abolished at New Orleans by the authority of government, at the recommendation of the medical faculty of that town; that the profession is nearly unanimous in agreeing that the yellow fever is there of local origin; and, what is still more extraordinary, our author himself points out New Orleans as exactly the situation where this kind of fever may be expected to be found.

Our author gives us a definition of infection and contagion, of so great a length that they may be rather called descriptions than definitions. Among the diseases which are arranged under the head of Infection, we find putrid fevers, erysipelas, ophthalmia, &c. The distinctive property of infection is to have the power of affecting a great number of persons at the same time, without their having any communication with each other, or with those already labouring under the disease. In so far he agrees with his antagonists, that infectious diseases are not always or necessarily contagious; but to say that they never become so, he adds, is in direct opposition to the evidence of facts. In the instances which he adduces to prove this position, he places the true plague and the yellow fever upon the same level, and tells us, over and over again, the often refuted stories of its propagation by importation at Cadiz, Xeres, Seville, &c. —nay, he affirms that the contagion is brought from the native country of the yellow fever, in the goods of the sick, in porous substances which they have touched, &c. &c. Thus we find that all the evidence which, in our mind, goes clearly to establish the non-contagious nature of the yellow fever, is either unknown to our author, or contemptuously rejected. His belief in contagion, indeed, is carried to an extent, of which we know no other example. "The list of contagious diseases, (he says,) both febrile and non-febrile, is sufficiently extensive, and we only pretended to speak of the first class here. Now, here are

some of the incontestable circumstances under which they have been found to develop themselves."

The first example given is that of the Black-hole of Calcutta, in which, at the end of twenty-four hours, only twenty-three persons out of 146 were found alive.* These people, it is well known, died from the mere want of respirable air; and how this example can in any way favour M. Foderé's views, we are at a loss to understand.

He seems to think that the assembling together a number of sick persons is not always necessary to the production of a contagious disease, but that one diseased person alone, under favourable circumstances, will communicate a similar disease to any indefinite extent; and he quotes, apparently with approbation, from Professor CARMINATI, of Pavia, the history of a lying-in woman, otherwise healthy, who was shut up in a warm room, the air of which was not renewed, who was exposed to a heating regimen, and who contracted an acute and malignant fever, which became contagious. This is followed by an instance of a *miliary fever* succeeding to an ill-treated peripneumony, and which was communicated to several persons in the same family!

These extracts, will, we trust, convince our readers how very unnecessary it is for us to pursue the examination of this part of M. Foderé's labours any further. We find throughout a great deal of reading, ill-digested, a large stock of credulity, and the most confirmed and bigotted prejudice to opinions, at least questionable on some points, and absolutely untenable on others.

The next chapter in succession (the sixth) is very short, and contains a *Classification of Epidemic Diseases according to their Causes.*—The divisions which he adopts are those diseases which are the product of bad food, of atmospheric intemperies, of marshy ground, of morbific effluvia which are borne in the air, those which arise from different principles of infection, and, lastly, those which are the productions of disease,—or, in other words, of contagion. "Certainly, (continues our author,) such an arrangement would not be despicable, and ought to be preferred, especially if it should unite the means of securing individuals, cities, and empires, with the knowledge of these diseases and their method of treatment: but when so many systems, invented to facilitate the study of natural history, have all

* In relating this example, M. Foderé makes more than one mistake. He states the number of persons confined to have been forty-five men and one woman, leaving out *only one hundred.* He extends their confinement to twenty-four hours; whereas they were imprisoned at eight in the evening, and the poor remainder were liberated at six o'clock on the following morning. Indeed, we should scarcely believe that M. Foderé was relating the same story, if the date and place did not compel us to do so.

their weak side; when all nosological arrangements have something forced and unnatural about them; when, quitting our books, where every thing is clear, and giving ourselves up to practice, we see the greater number of febrile diseases pass one into the other, either as a natural consequence or through error of treatment, we dare not present this classification but with great diffidence." (p. 241.)

We cannot but think the above arrangement extremely defective, and which an enumeration of the different orders will, we conceive, render obvious to our readers. Nor can we much applaud the precision or justness of many of the remarks which usher in this new classification; for example:

"*Typhus*, or *malignant fever*, (says M Foderé,) very often arises from the elements which would seem only proper to give birth to *putrid* fevers; and, in an extended epidemic, one sees, among the sick, one or other of these fevers succeed to, and become complicated with, each other. As to the exanthemata, particularly such as are *symptomatic*, nothing is fixed or precise. *Erysipelas, petechiæ, purpura, miliary eruptions, pemphigus*, &c. are often associated with diseases arising from all sorts of causes,—sometimes as signs of danger, sometimes as critical, and sometimes as insignificant appendages. Periodical fevers are not exempt. Swellings of the parotid glands, buboes, abscesses, carbuncular pustules, are not always necessarily signs of the true plague: they show themselves occasionally in typhoid fevers, in that of America, and in marsh fever. Finally, we have seen that the character of contagion cannot form one class, *because all diseases may acquire it;* and because, on the contrary, among the diseases *decidedly contagious*, there are some that, under certain circumstances, *are not communicated.*" (p. 243.)

We have printed some portion of this precious passage in italics, leaving our readers to form their own judgment of the clear conception and accurate knowledge of febrile diseases contained in these few lines.

We now proceed to enumerate the six orders of epidemic diseases, and their species. The first order, diseases arising from food or drink, contains six species,—simple gastric fever, worm fever, fever with convulsions or raphania, fever with gangrene from ergot, epidemic diarrhœa, dysentery, and dysenteric fever or scurvy. We shall only remark upon this order generally, that few of these diseases deserve to be classed among epidemics; and the causes assigned, in the instances of dysentery, worm-fever, and simple gastric fever, are mere assumptions, totally destitute of all proof.—The second order, or epidemics from miasmata, has three species only,—intermittent fevers, slow insidious fevers (*fièvres subintrantes et insidieuses*,) and remittent fevers, especially those of hot climates. Here we find that the yellow fever does not find its place, although

as clearly the product of marsh miasmata as either of the foregoing species; but this will be afterwards found, not only in one, but in two successive orders, first as a disease the product of infection, and, secondly, among those called contagious.—The third order contains eight species; it is entitled, diseases arising solely from variations in the atmosphere: these are inflammatory fevers, inflammations, bilious and ardent bilious fevers, cholera morbus, colics, catarrhal fevers, mucous, pituitous, and mesenteric fevers, cold and pulmonary catarrh, hooping-cough, and croup. Here again we have abundance of instances of gratuitous assumptions: can M. Foderé positively affirm that either hooping-cough, or cholera morbus, or affections of the mesentery, are dependant solely upon atmospheric changes? To us it appears that, if the names of these diseases had been drawn by lottery, they could scarcely be arranged in a less scientific or more apparently fortuitous manner.—The fourth order of diseases, arising from heterogeneous substances transported in the air, is equally fanciful: here are six species of ophthalmia, epidemic gangrenous angina, (what is that?) false pleurisies, or peripneumony, epidemic miliary fevers and sweats, puerperal fevers, and erysipelatous fevers.—The fifth order comprises diseases of infection, and contains four species: the putrid fever, yellow fever of the equinoctial regions of America, the epidemic petechial fever, and epidemic malignant pustule of hospitals. Here we find it decided that petechial and putrid fevers are distinct from each other, as also from the true typhus; that the yellow fever of America is, in that country, only the produce of infection. And the sixth order, containing the contagious diseases, in number seven,—namely, the European typhus, the plague, or Eastern typhus, the imported yellow fever, the small-pox, measles, scarlet fever, and *epidemic syphilis*, completes this climax of absurdity: for, by this arrangement, M. Foderé decides that the yellow fever is always an imported malady in Europe, since he has struck it out of the order of diseases from infection. He has done so also by small-pox, measles, and scarlet fever; though there can be no reason whatever for doubting that these complaints, although undoubtedly contagious, are to all intents and purposes the product of a particular infectious condition of the atmosphere; and is not that proved by these diseases being epidemic only in some particular seasons or at some particular places, whilst at other times sporadic cases only are to be met with; the contagious quality of such cases remaining in equal force.

The first section of the volume concludes with chapter viith, being a general view of the *means of preventing diseases*.—We may dismiss this chapter with one observation only: it contains nothing new, but, generally speaking, the rules and cautions re-

commended are judicious. Our author, placing the yellow fever and the plague upon the same footing, advocates the strict enforcement of the quarantine laws in both instances. In the case of the plague, we most cordially agree with him, and refer our readers to some highly judicious, but rather severe strictures, which Dr. Paris* has published on the work of Dr. Maclean; a work to which may be applied the remark of Holofernes,† "that he draweth out the web of his verbosity finer than the staple of his argument." With regard to the rigid application of quarantine to the case of yellow fever, many reasonable objections may be urged: it may be highly proper, in the present state of our knowledge, to exact a strict scrutiny into all vessels ariving from ports where that disease is known to rage; it may be quite necessary to segregate those who arrive with suspicious symptoms from the sound and healthy; but surely, when the local origin of this fever is made out almost to a demonstration, to shut up the wretched inhabitants in the very focus of infection,—to draw a line round a multitude of our fellow creatures, and thereby to devote them to that destruction which a removal from the origin of the pestilence would altogether prevent, is a most barbarous policy, and one which all recent examples show to be not only cruel, but totally unnecessary, and even futile.

De l'Oblitération des Veines, et de son Influence sur la Formation des Hydropisies Partielles : Considérations sur les Hydropisies Passives en général. Par M. Bouillaud, Interne des Hôpitaux Civils de Paris.‡

(From the London Medical Repository, for August, 1823.)

In a late number of this Journal we gave a short extract from a communication, by M. Bouillaud,§ contained in the January Number of the Journal de Physiologie, in which he stated that he had observed, in several cases of infiltration or œdema of the lower extremities, that the venous trunks, after entering the pelvis, were quite impermeable, and filled by a concrete and organized coagulum. The communication before us is a more extended inquiry into the same subject, and consists of an attempt to confirm, by facts and observations, that *passive* dropsies, or those which are not occasioned by acute or chronic in-

* Medical Jurisprudence, vol. i.
† Love's Labour Lost.
‡ Archives Générales de Médecine, Juin, 1823.
§ See page 552 of last number of this Journal.

flammation of the serous membranes, are all produced by the influence of some obstacle to the venous circulation; and that, in a considerable number of cases, such obstacle consists in an obliteration of the venous system of the part which is the seat of the dropsical affection. By this explanation, the author, of course, denies that they are occasioned by a debility either of the general system or of the lymphatic vessels.

M. Bouillaud commences his observations by a detail of seven cases, which serve as a basis to his new theory: of these, two have already been referred to in this Journal; and the following are abstracts of the others:—

Case 1*st*.—A female, aged fifty-five years, was admitted into the Hospital Cochin, labouring under pulmonary tubercles and chronic enteritis, accompanied with œdema of the lower extremities: she died forty-five days after her admission. On opening the body, a cancerous tumour was found, formed by the rectum, uterus, cellular tissue, and surrounding ganglions. The hypogastric and iliac veins, which traversed, as it were, this enormous tumour, were obliterated by a fibrinous, reddish, old, and apparently carnified coagulum: the obliteration extended downwards the whole length of the crural veins, and upwards into the vena cava, as high as the right kidney: towards this part the coagulum was of a lesser consistence, somewhat resembling the lees of wine.

Case 2*d** has been already given in this Journal.

Case 3*d*.—A man, aged sixty years, was received into the same hospital, labouring under chronic pleurisy and peritonitis. On his admission, his lower extremities alone were œdematous; but on the following days the œdema extended to the scrotum, and soon afterwards even to the axillæ: it did not, however, affect the face or upper extremities. After the expiration of some time, the dropsy of the cellular tissue of the trunk and scrotum disappeared, and it was at the same time observed that the veins of the abdominal parietes acquired a very considerable size, and became somewhat varicose. Seventy-five days after his admission he died, still labouring under the infiltration of his lower extremities. On *dissection*, the right kidney was found to have degenerated into a cancerous, encephaloid substance, forming a tumour equal in size to half the liver. This enormous tumour had compressed and flattened the vena cava towards its division into the iliacs: the canal of this vessel, which was wholly impermeable, was distended and obliterated by a fibrinous, friable, pultaceous matter, bearing some resemblance to the disorganized tissue of the kidney. The emulgent veins, the veins of the pelvis and of the lower extremities, were also obliterated by blood, which had been a very long

* Repository, vol. xix. p. 435.

time coagulated. The veins of other parts contained liquid blood.

Case 4th.—A female, aged twenty-one, died from the effects of typhus: on her admission into the hospital the left lower extremity was œdematous and painful. She died nine days afterwards. On *dissection*, the veins of the affected limb were found obliterated by a long, solid, reddish, fibrinous, fleshy-looking coagulum, which extended as high as the vena cava. The veins of the opposite limb contained liquid blood. Their internal membrane was less red than that of the obliterated veins.

*Case 5th** has also been already given.

Case 6th.—A female, aged thirty years, three months after delivery, was admitted into the Hospital Cochin, with symptoms of most severe peritonitis, and with the left lower extremity in an anasarcous state. Seven days after her admission she died. On *dissection*, an enormous abscess was discovered in the pelvis, which appeared to have begun in the left side of the cavity, in the anterior part of the psoas muscle. The whole of the surrounding parts were in a truly frightful state of disorganization. The left iliac and hypogastric arteries and veins, which were situated in the midst of the purulent mass, were thickened. The external layers of their parietes were disorganized and of a lardaceous appearance. The veins of the anasarcous limb, not excepting the great saphena, were obliterated by a solid, fibrinous, and friable coagulum. The other veins were pervious.

Case 7th.—A female, aged seventy-five years, was admitted into the hospital, labouring under chronic pleurisy and pulmonary tubercles: the left lower limb was œdematous, and the sub-cutaneous veins of the leg were varicose. Seven days after her entrance, this woman expired. On *dissection*, the sub-cutaneous veins of the leg, and the left crural and iliac veins, were found completely obliterated in the same manner as in all the preceding cases. The other veins were, in general, free, and contained black liquid blood.

The foregoing histories certainly go far to corroborate the theory laid down by M. Bouillaud: in addition to which it may be well to observe, that Morgagni relates the history of a woman who died whilst affected with infiltration of one of the limbs; and, on dissection, the femoral vein was found to be filled by a sanguineous concretion; the correspondent iliac vein was obliterated.

After referring to a case mentioned by Hodgson, and to others cited by Breschet, in his treatise on Inflammation of the Veins, from Travers, Raikem, Bodson, &c. M. Bouillaud observes, that it is not uncommon to meet with infiltration of one

* Repository, vol. xix. p. 435.

or both the lower limbs of women recently delivered. On the dissection of such instances, as in cases fifth and sixth above detailed, he has met with obliterations of the crural veins. For analogous examples, the works of Chaussier, Meckel, and Travers, are referred to.

The author next proceeds to notice the opinion of Hodgson, that dropsies are not, in general, the consequence of the obliteration of a principal vein.

"This assertion," says he, "which is founded on three or four facts only, is in contradiction to the numerous observations which have just been related. I am, however, very far from calling in question the facts which are adduced as proofs that obliteration of the veins is not, *in general*, followed by dropsy. I may merely observe, that this proposition is wanting in correctness. Mr. Hodgson ought to have said that venous obliteration is not constantly accompanied by dropsy. Besides, the negative facts of which he speaks are simple exceptions to a general law. What do they prove? That this same nature which is so ingenious in re-establishing the arterial circulation in a limb, the principal artery of which has been tied, is equally possessed of means for keeping up the course of the venous blood in a limb, the principal veins of which are obliterated. These means consist in innumerable communications established between every part of the venous system. It is proper, however, to remark, that the collateral venous circulation is much less active than the collateral arterial. Thus, in twenty cases, I have never observed the venous circulation become re-established in those limbs, where it had been interrupted.

"If the course of the venous blood becomes restored with very great difficulty in a limb, the principal veins of which are impermeable, it is not the same when less important and, as it were, secondary veins are obliterated. This is the reason why, in cases of obliteration of the sub-cutaneous veins of the fore-arm, as may occur in consequence of inflammation of those vessels, after bleeding, the venous circulation is scarcely disturbed. For the same reason, varicose veins of the lower limbs may be exercised without running the risk of producing serous infiltration. In these different circumstances, the deep-seated veins of the limbs remaining free, the venous circulation goes on with the greatest facility."

M. Bouillaud next proceeds to apply his principles to the case of ascites, or rather, to that species which he has called *passive* ascites; and refers to three cases in which similar phenomena were observed regarding that disease, as in the case of infiltrations of the lower extremities.

Case 1*st*.—In 1819, on the dissection of an individual who succumbed under a tuberculous *engorgement* of the liver, the author found the trunk of the vena portæ obliterated by a very old fibrinous coagulum. The peritoneum was healthy; its cavity contained much yellowish fluid.

Case 2d.—A woman, aged thirty-eight years, had been affected with jaundice for eight months, when she was admitted into the Hospital Cochin. Fluctuation was very manifest in the abdomen; and through the parietes, in the right side, an enormous tumour could be felt, the nature of which it was difficult to ascertain. She died in a state of marasmus twenty days after her admission. The limbs were never at all œdematous. On *dissection*, a great quantity of yellowish fluid was found in the peritoneal cavity; the peritoneum was healthy. The tumour which had been felt through the abdominal parietes, was nothing more than the gall-bladder, so much dilated as to equal, in size, the head of an infant: it contained bile and a hundred biliary calculi. A considerable tuberculous mass, occupying the inferior part of the liver and a portion of the pancreas, compressed the ductus hepaticus, cysticus, and choledochus, as well as the trunk of the vena portæ. The first were impermeable. The vena portæ was obliterated by a clot of blood similar to those before described.

Case 3d.—A patient, aged fifty, was admitted, labouring under icterus and ascites. The upper and lower limbs presented no infiltration. Three weeks after her admission she died. On *dissection*, the trunk of the vena portæ was found to be filled and obstructed by a fibrous, corrupted, pultaceous matter, formed by blood which had been for a long time coagulated. The inferior surface of the liver had become degenerated into a tuberculous substance, in which, by the most minute research, no vestige of the hepatic, cystic, and choledochus ducts, could be discovered. The gall-bladder was so much disorganized, that it could not be easily recognised. It contained a dirty, purulent liquid, in which several biliary concretions were observable: it adhered to the arch of the colon, and if the patient had lived longer, a communication would have been established between the intestine and the gall-bladder, so that the biliary calculi might have been discharged *per anum*.

Such are the principal facts and considerations adduced by M. Bouillaud in the communication before us, in support of the theory which he has embraced regarding the general cause of serous infiltrations; and although they may be considered to, and assuredly do, require farther investigation, yet, so far as they go, they throw considerable light on the pathology of hydropical affections: how far venous obstruction may be considered a general cause of serous infiltrations, remains to be proved by future observation. We have shown above, that in M. Bouillaud's opinion they are. With our author's deductions from the facts and considerations of which we have given a sketch, we shall conclude our analysis.

1st. "Obliteration of the veins is a cause of *dropsy* in the part

where such obliteration is situated: as this obliteration never occupies the whole of the venous system, the dropsies, produced by it, are *partial:* it has been an error to attribute these *local* dropsies to a *general* debility, or to an atony of the lymphatic vessels: obliteration of the veins coinciding with dropsy, is a pathological fact which confirms the new doctrine of absorption.

2d. "Passive general dropsies are owing to some obstacle to venous circulation: these dropsies are only general by reason of the seat of the obstacle which exists at the centre, and as it were at the confluence of all the venous system.

3d. "That it is highly necessary to avoid confounding the dropsical affections, treated of in this work, with those which are the result of a chronic inflammation of the serous membranes; they are essentially different—the cause of the former is wholly *mechanical;* that of the latter entirely *vital.*"

Medical and Philosophical Intelligence.

M. Esquirol's *Account of a Colony of Maniacs, at Gheel, near Brussels.**—From time immemorial, there has existed in the centre of Belgium, in the Commune of Gheel, a colony of maniacs, of which little has hitherto been accurately known by the public, or the profession, till M. Esquirol visited it in 1821. The first public notice which we find of them is in 1803, when the Prefect of Dyle caused all the maniacs kept in Brussels to be taken to Gheel, as they were badly accommodated in the hospital at Brussels. The following year, a short notice of the state of Gheel, was inserted in M. Herbouille's Statistical Account of the District; in which, he says, that this "Strange traffic has been time out of mind the only resource of the inhabitants of Gheel, and no accident from it was ever known to have taken place." Dr. Andrée is the next writer who mentions Gheel, in his work on Charitable Establishments, published in 1808. He was informed, that madness is endemic at Gheel! adding, that he had not time to examine "Ilo fondamento di questa voce popolare;" but if it be true, it will be an interesting physiological phenomena. A still more erroneous account is given by M. Jouy, in the third volume of the "Hermite de la Chaussé d'Antin." Even the Geographical Dictionary of the Pays Bas copies verbatim, Herbouille's Statistical account.

On the 29th of August, 1811, M. Esquirol went to Gheel, accompanied by Dr. Vaisin and M. Vanetzbon, director of the Belgic Mint, who undertook the office of Flemish interpreter. He remained two days, walking about the village, visiting the inhabitants, and investigating the peculiarities of this singular establishment. The small

* Notizie sul villagio di Gheel. Del Signor Esquirol. (Lette all'Accademia Reale di Medicina).

[We have not seen the French paper whence the Italian one is taken.—Ed.]

town of Gheel, is situated on the north angle of a triangle, formed by Anvers, Malines, and Gheel, and with some hamlets and farms in the vicinity, contains about six or seven thousand inhabitants, of which four or five hundred are maniacs. It has only a single street, which is broad and paved: the houses are well built, but have generally but one floor. He met a maniac in the street, who was polite enough to conduct him to the parochial church, the hospital, situated near the centre of the town, and to the church of St. Amanzius, whose architecture bespoke it to be of the thirteenth or fourteenth century. Here is the shrine of St. Nymphna the Martyr, whose bones were miraculously discovered in the seventh century, and to whom the colony seems to owe its existence; for it being discovered that St. Nymphna had the peculiar power of curing maniacal distempers, her shrine was soon crowded with devotees. Maniacs were accordingly brought thither in great numbers, accompanied by their relatives, and the inhabitants found it lucrative to board and lodge the strangers.

St. Nymphna still continues to enjoy her celebrity for the cure of mania, but her credit is, as might be expected, rather on the decline; for the old rector, who is upwards of seventy, admitted, that though he had frequently seen cures effected by the intercession of the saint, yet these were becoming daily more rare. To obtain a cure in this way, a very great number of minute, tedious, expensive and absurd ceremonies must be gone through, which it is unnecessary to detail. The following facts are more interesting:

The relatives of the patients intrust them to the inhabitants of Gheel, under a sort of contract. The vicinity of the church is in most request for patients, though some are lodged in the neighbouring farms and hamlets; but M. Esquirol met with few beyond the town. Each inhabitant may take from one to five patients, and for the poor of the commune an hospital is provided, in which eight or ten are received. The patients, who are mischievous or unruly, sleep apart upon straw, or on a bag of chopped straw. Those who are more harmless have similar beds to their hosts, and eat at the same table; and of course, those in town, though they have not so good air, have better food and better beds, than those lodged in farms and hamlets. The patients maintained at the expense of the hospitals of Brussels and Malines, are clothed in woollen stuff; the others, according to the fancy of their relatives. The greater part of them live, like the other inhabitants, on milk, butter, and potatoes. They are allowed to walk in the street, or in the country, without restraint, without fear, and even without being mustered. When they escape beyond the territories of the commune, they are pursued by the gens d'armerie, and conducted back to their homes. When any of them become unruly they are loaded with irons, both on the hands and feet; and M. Esquirol saw one poor fellow walking in the street with his legs much lacerated by the friction of his irons. Many of them are employed to the great advantage of their hosts, in agriculture, and other simple labours. The female patients are all employed in sewing and making lace, and are exempt from all domestic services. A very small remuneration is given for such services, such as a flask of beer on Sundays, &c. The patients are not allowed to go to the parish church, but fifty or sixty

of them assist in singing, and in various parts of the service, at the church of St. Amanzius. Sometimes they will interrupt the service, but this is rare. The order of the police prescribes that none of the patients must be seen out of doors after sunset, and that none who are furious be seen out at all. Charities pay from two to three hundred francs per annum for each patient; families pay from six to twelve hundred francs.

The administration of Brussels maintains a director at Gheel, who has officers under him, forming, with two physicians, a commission of surveillance; pregnant female patients are sent to Brussels, but this rarely occurs, being only in the proportion of five in ten years. He learned from Dr. Backer, who has practised at Gheel for thirty-two years, that the patients are generally incurable; suicides are rare; thirty years ago a patient cut his throat in the church, during the nine days ceremony for his cure. There are more cures made in the suburbs than in the town, though it is remarkable that the patients are worse treated.

Among the most prevalent causes stated by Dr. Backer, are religious melancholy, deluded ambition, unsuccessful love, and domestic misfortunes. The most hopeless cases are those arising from religious causes. Intermittent mania is frequently cured, when the patient can be induced during the sane intervals to engage in rural labours. Monomania is sometimes successfully treated with neutral salts in aqua graminis. Vinegar is thought useful in restraining fury. The mortality among the patients is a little more than that of the other inhabitants; the females in particular, are subject to a diarrhœa of black bilious matter, which often proves fatal. These two last years, the number of patients has been about 400, the females being nearly in the same proportion as the males. About 3-4ths of the whole have full liberty to go and return at their pleasure; and they are never crowded round and tormented by the children, as would be the case in other places, and the inhabitants live in the midst of them with perfect security. M. Esquirol has transmitted proposals to improve the establishment at Gheel, to the minister of the interior of Holland, and we only wish that these improvements, if adopted, may not be—as has too often occurred in such cases—changes for the worse.—*Quart. Journ. of Med. and Surg.*

Motions of the Eye.—A paper, in illustration of the uses of the muscles connected with the eye-ball, was lately communicated to the Royal Society, by Mr. Charles Bell. The object of these inquiries is to show that certain motions are performed by the eye, which have not hitherto been described. Thus, every time the eyelids are brought together to cover the globe, the eye turns upwards; without which motion it would not be properly moistened, nor the particles of dust removed from its surface. Next it is shown that during sleep the ball is turned up, so as to lodge under the superior palpebra. These movements are rapid and involuntary, while others are under the government of the will, and for the purpose of directing the eye to different objects. Both the oblique and straight muscles have been regarded as voluntary; but Mr. Bell maintains that the oblique are for the

performance of the insensible motions, and the recti muscles for those under the command of volition. According to this view, we are enabled to judge of the distance and relative position of objects by the consciousness we have of the action of the straight muscles. A further inference is, that the functions of these muscles are connected inseparably with the state of the retina, being active only so long as the sense of vision is in activity: when this ceases to act, the oblique muscles come into play, and draw the pupil upwards beneath the upper eyelid. Hence that turning of the eyeball which we witness in sleep, in fainting, or in death, is but the indication of insensibility. In another paper the author purposes to explain the uses of the numerous nerves going to the orbit, on the principles of the foregoing remarks.—*Lond. Med. and Phys. Journ.*

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Waters containing Carbonic Acid.—It results from many observations made by M. Desportes, that the use of Seltzer water, either natural or artificial, the water of Pougues, or, generally speaking, all those waters containing carbonic acid gas, should not be lightly recommended, and that the idiosincracy of patients should previously be consulted; and that the first effects of such waters prescribed during meals, mixed with wine, should especially be observed. The author has seen the action of these waters derange the digestive functions, and, by sympathy, produce an irritation of the brain, which put on at first the character of intoxication: with several patients, severe nervous symptoms and a threatening of asphyxia were the consequences, and particularly violent pains in the region of the heart.—*Revue Med.*

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Case of Diabetes, treated with Carbonate of Ammonia. By Dr. Neumann, of Berlin.—A female, aged forty-eight years, of a feeble and hysterical constitution, suffered an attack of abdominal dropsy. This disease was soon after followed by an abundant secretion of urine, and a voracious appetite, with extreme emaciation. The diabetic state of the urine was demonstrated both by its quantity, and by its saccharine properties. Carbonate of ammonia was prescribed, and continued for four months; its dose was increased from five grains thrice daily, to fifty grains in the day. The patient left the hospital perfectly cured.—*Medical Repository.*

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On the Cure of Intermittents by Frictions with the tartarized Antimonial Ointment on the Epigastrium.—During the winter of 1815, Dr. Prommer had occasion to treat numerous cases of intermittents occurring in the army of Wurtemberg, cantoned at that time on the Loire and Allier. He frequently found the cinchona to fail in producing its usual effects, and observed that the fever generally disappeared on the eruption of pimples or pustules on any part of the body. Taking advantage of this observation, he was induced to try the effects of artificial eruptions in its cure. With this intention he employed the common tartar emetic ointment, and prescribed it to be rubbed upon the abdomen and epigastric region. The first two individuals whom he subjected to this treatment recovered immediately upon the maturation of the pustules which were thus produced. This

induced him to use the same means in a great number of cases then under treatment, and in those which subsequently occurred, and in all the cases with similar success. Dr. P. employed the same mode of cure in those varieties of agues which were complicated with nervous symptoms with the same benefit.—*Journ. der Practischen, Heilk.* 1823.

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Marsh Miasmata.—The last number of the Transactions of the Royal Society of Edinburgh (Vol. 9. Part 2.), contains a paper "on Marsh Poison," from the pen of Dr. Ferguson of the Army Medical Staff, whose name is familiar to our readers.

In this paper, Dr. Ferguson undertakes to prove, that the opinions generally entertained with respect to the nature and origin of "Pestiferous miasmata" are erroneous; and although we cannot go along with him in all the conclusions he has come to upon this point, yet we do think he has made out a strong case, and has said enough to show that the subject requires further investigation.

Investigation, however, to be useful, must proceed upon some *undeniable* principle, and must have for its object the solution of some question or questions which really admit of proof, and which, at the same time, have reference to the cure or prevention of disease.

The first step, therefore, in an inquiry of this kind, must be, to establish, by a cautious induction of facts, the actual existence of such agents as "pestiferous miasmata;"—which being done, the inquirer may then proceed to the investigation of the following questions, which are so framed as to admit of the highest species of proof which can be brought to bear upon a subject of this nature, and which, at the same time, involve the consideration of every interesting and important fact connected with the origin and influence of pestiferous miasmata.

1. Under what circumstances have pestiferous miasmata been observed to arise from the surface of the earth?

2. What diseases have such miasmata been observed to produce in the human frame?—*Edin. Med. Surg. Journal.*

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Vaccination.—A child, aged about twelve months, was vaccinated in the arm. No inflammation followed. In about eight or ten days, therefrom, the operation was repeated, and on the same arm. This attempt was successful, and the child passed regularly through the disease, the first puncture remaining all the time quiescent.

In about *six months*, however, this puncture inflamed spontaneously; and the physician who was called in, asserts, that he found on the part a well formed vesicle, "presenting in every way the satisfactory appearances we expect to find about the tenth or eleventh day after the insertion of the vaccine lymph."

He adds, "the cicatrices of both pocks now remain, and are equally well defined."—*Lond. Med. Journ.*

When Mr. Pearson transmitted to China some of the vaccine lymph, he sent with it a pamphlet, in the Chinese language, containing directions for its use.

Of this pamphlet an edition was published in China soon after its

arrival, but expurgated; so that nothing appeared from which it could be learned that vaccination was not a Chinese discovery!!!—*Annals of Philosophy.*

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Therapeutic Effects of Hyoscyamus.—"Until it shall be held absolutely necessary to procure a patient a rending headach, with vertigo, phantastic reveries, burning thirst, loss of sight, perversion of the taste, insuperable disgust for every sort of food or drink—without a single wink of sleep, this remedy must continue utterly useless; and in the mean time, it should be expunged from every Pharmacopœia." —*Archives Gén. de Méd. Mars*, 1823. Such is the conclusion to which M. Fouquier of La Charité has been led by experiments with the hyoscyamus on 200 of his patients. He denies that it ever acts decidedly as a hypnotic. In opposition to his observations, we may remark, that for a long time it has been freely used in the Infirmary of this city for inducing sleep; and that, as far as we have ourselves observed, it is as effectual as opium itself, and never produces the effects observed at La Charité. The experiments of Fouquier tend to show, that the extract prepared from the expressed juice, and the aqueous extract procured by macerating the dried plant in water at 100° F., and evaporating the product by the water-bath, are nearly or absolutely inert. But M. Planche prepared for him an alcoholic extract of great power, by maceration in weak alcohol at 82°. Of this extract he seems to have given from ten to thirty grains for a dose; and always observed it produce the disagreeable symptoms we have mentioned. The form under which it is used in this country is that of tincture, very similar to that from which Planche prepared his extract. Does the alcohol qualify its properties, and render it more purely hypnotic?—*Edin. Med. Surg. Journ.*

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Animal Heat.—Dulong has lately repeated the well known experiments of Lavoisier and Delaplace upon this subject, chiefly with the view of ascertaining whether the quantity of caloric, developed by the oxygen which disappears in respiration, is equivalent to the quantity given out by the body. He employed for that purpose a modification of Count Rumford's water calorimeter. The result was, that the quantity of caloric disengaged by the conversion of the oxygen into carbonic acid, is equal in carnivorous animals to between 49 and 55 parts in 100, of the heat disengaged by the whole body during the same interval of time; and in frugivorous animals, to betwixt 65 and 75 parts; and that the whole quantity of caloric disengaged by the formation of carbonic acid and water together, is equivalent to between 69 and 80 parts only. He thence concludes, that the animal heat is greater than can be accounted for by the fixing of oxygen during respiration, and therefore, that some other source of calorification must exist.—*Journal de Physiol.*

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On the Transition of Liquids from the Mother to the Fœtus.—From experiments on pregnant rabbits, Professor Meyer concludes, 1st. That stillicidious fluids, infused into the mother, may be transferred to the fœtus, though he does not deem the point to be quite

settled, more comparative experiments being wanted to establish it; 2d. That the transition takes place by the deposition of the fluid in the cavity of the amnion; 3d. That the lungs and trachea of the fœtus exhibit no traces of the injected fluid, which proves that the fœtus does not, as Scheel and others maintain, draw the liquor amnii into the lungs. M. Meyer never thought this opinion sound, and explains the appearance of amnial liquor in the trachea of a fœtus, by observing that the fœtus sometimes makes respiratory movements while enclosed in the membranes of the ovum, which may also take place with the mature fœtus in utero, if the circulation be any way interrupted. This, however, is not natural, and may prove fatal to the fœtus.—*Hamburger Archiv. für Medicin.*

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Experiments on the Pulse.—Our readers may compare the following remarks with the theory of the late Dr. Parry, which has excited so much notice. M. Dollinger, on visiting some water-works, observed, that on grasping the lead pipes into which water was forced upwards by pumps, he could plainly perceive an impulse at each successive wave, very much resembling what is felt in the arteries. As this could not arise, as he ascertained, from the trembling of the pipes, which were well secured, nor from the vibrations of his hand, he was anxious to find whether the same effect would be perceived in an artery when laid bare. In the presence of his pupils, accordingly, he laid bare the carotid of a dog, and though no motion could be seen by the eye, the pulse was distinctly felt. He hence concluded that the arteries suffer no alternate contraction or dilatation. The pulse is therefore, he thinks, produced by the wave of blood, the impulse being communicated without the artery suffering any dilatation, in the same way as the last of a series of elastic balls is moved by an impulse communicated to the first, while the intervening ones are unmoved.—*Magazin der gesammten Heilkunde.*

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Syphilitic Inflammation.—Cases often occur in which inflammation appears of an obstinate, tedious, and erysipelatous character, without symptoms of a syphilitic origin, though it may be readily confounded with syphilitic inflammation, particularly where the central ulcer is not sufficiently formed, or too deep in the throat to be discovered. In these cases Dr. Von Autenrieth, never met with the following symptom, which, on the contrary, he never found wanting in any case where a common syphilitic ulcer, either large or small, superficial or deep-seated, existed in the throat. This characteristic symptom is a colourless watery froth, consisting of little vesicles found in large or small quantities at the hind part of the root of the tongue. Whereever he found this froth, he was sure to meet with a syphilitic ulcer if ever so hidden. A very close examination at the moment, when, on the root being pressed down, the patient involuntary attempts to swallow, easily discovers whether the froth be present. By attending to this, the author was never deceived in his diagnosis.—*Mag. Auslandischen Literature.*

Proofs that the Yellow Fever of Spain is different from that of the West Indies.—We are informed, by a great number of physicians who have practised in the West Indies, that the *yellow fever* in that part of the world is endemic, and not contagious, and that it is possible to escape its influence by retiring into the interior of the country, and leaving the low, damp, and marshy sea-coast, where it is produced; that it never spreads in those elevated and healthy districts, even although persons ill of the fever should be brought there; that the natives, and those who have become accustomed to the climate, are rarely influenced by these local causes; that those persons who inhabit the mountains run nearly as much risk from the disease as Europeans, when they visit the low grounds; but that Europeans are in a more particular manner the victims of the disease.

We can hardly withhold our assent from these conclusions, which are supported by such strong testimony, and so many circumstantial facts; but it would be very dangerous to apply the doctrine of endemic and non-contagious causes to our continent, and more particularly the Spanish peninsula. It is proved by the following facts, that the yellow fever of Spain has a very different character, which is, perhaps, occasioned by the climate of Europe. These facts I collected on the spot.

1. Its mortality is greatest amongst the natives.

2. It is not confined to the sea-coast, but spreads far into the interior of the country, and even into the driest, most elevated, and healthiest districts; for instance, to Carmona, which is from 20 to 25 leagues distant from the sea.

3. It is found in the interior of the country, when the sea-port towns are free from it; as in Murcia, in 1812.

4. It was not produced in Spain, as we are assured it has been in the West Indies, by the effluvia of marshes, which had been rendered active, by exceedingly warm weather. The towns in the bay of Cadiz, where for the most part it first shows itself, are in general salubrious; at Chiclana, in particular, the rich inhabitants of Cadiz have their country-seats and pleasure-grounds.

5. It is believed by all the inhabitants of the country, that the disease is imported from America, and that it has been propagated by contagion over a great part of Andalusia. It must have been in consequence of numerous proofs of contagion, that lazarettos have been established, even in the cities of the interior.

6. The places where the disease is prevalent are not fatal to strangers; for not a single Frenchman stationed in 1810, 1811, and 1812, in the situations where it usually appeared, was affected by the disease, which, besides, had not previously appeared for several years; nor did it show itself for several years after. Is so long an interval of its non-appearance consistent with its production from local causes inherent in the climate? If these had not been imaginary causes, they would surely have affected in a very violent manner those Frenchmen not habituated to the climate, who in the greatest heats of 1811, (the year of the Comet) were encamped on the sea-coast, on very low grounds, where a great number of mud-forts were built, which surrounded the whole bay. The hulks, so unhealthy, and

so crowded with French prisoners which had been stationed for several years in Cadiz bay, have never produced a single instance of yellow fever, although scurvy and dysentery have raged with the greatest violence on board of them.

7. It prevailed, in 1811 and 1812, but not in a very malignant form, in the kingdom of Murcia; and its being concentrated there was doubtless occasioned by the line of military posts which had been established to prevent its importations into the west of Andalusia, and by the difficulty of communication in time of war.

8. In the general retreat which took place in 1812, the army of Andalusia passed through the kingdom of Murcia, in the internal parts of which were some infected towns; but the bulk of the army escaped from the contagion, in consequence of strict orders having been given that no person whatever should enter them. However, the division of General Conroux was attacked by it, on account of one of the soldiers having had communication with a woman, infected with the yellow fever; but the rest of the army was preserved from the contagion, as Conroux's division was kept in the rear, in a state of complete insulation.

The following account of that circumstance, as it was put into the orders of the day, I received from M. Cohen. "The orderly dragoon of General Conroux enters a small town, when the yellow fever is prevalent, he has connexion with an infected woman, and is seized with the complaint. The general's aid-de-camp, and a few other men, are infected by him. The division soon arrives at Hiecla, a small town of Murcia, where there had been no epidemic malady, either amongst the inhabitants, or in the French battalion which had just left it. The infected patients of the division are placed in an hospital, and in a short time the aid-de-camp and ten men die, after having had the black vomiting."

From these facts, I think I may conclude that the yellow fever, which at that time reigned in Spain, was not produced by endemic causes. That it is independent of the high temperature of that climate; that it is equally prevalent among mountains as on the seacoast, which is generally thought to be its seat; that it does not depend on climate, as natives and strangers are both equally liable to its attack; and that, as its progress has been arrested by insulation; and, on the contrary, as it has been produced, when that precaution was neglected, we have a proof of its contagious nature. Indeed, in consequence of the facts observed in 1800, and the following years, it is the general opinion of the medical practitioners of Andalusia, that the disease is contagious.—*Decadas Medico Quirurgicas.*

New Cases of Acupuncturation.—If acupuncturation be established to be "so painless and convincingly efficacious," as Mr. Churchill represents it, he deserves our warmest thanks for introducing it into notice. We understand that the practice is rapidly gaining ground, and a short time will determine its character. He gives three cases of its success in rheumatism. A gardener, aged 50, had been some years subject to erratic rheumatism, which at last fixed in the left deltoid and pectoralis major, and refused to yield to cupping, blister-

ing, guiac, &c. A needle was pushed into the deltoid muscle, an inch in depth, when the pain entirely ceased in this part, but increased in the pectoralis major, which was next pierced, and removed the pain altogether. In a week or two all debility had gone, and he felt no remains of the disease. The next case was that of a man aged 45, who had intense pain in his back, from working in a damp cellar. He had been subject to lumbago. Two needles were pushed to the depth of two inches into the muscles of the loins; and as this was not sufficient, other two were pushed into the lumbar muscles. A few minutes after, he said he felt no pain, but was incredulous of his cure till he found he could walk with ease. Two days after he was well enough to resume his work.—A man, aged 48, with violent lumbago, had a needle introduced on each side of the spine, and on the pain instantly shifting to the upper part of the sacrum, it was pursued thither, and dislodged by another needle. Dover's powder was prescribed, and the patient got well.—*Medical Repository.*

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On the Russian Treatment of Hernia.—The following mode of replacing incarcerated hernia is employed by the Russian peasants. They take a vessel capable of containing a few pints, make a hole in its bottom, and stop it with a cork. The parts about the tumour are then rubbed with oil or soap, and the air in the vessel being rarefied with lighted tow, is placed over the parts like a cupping glass. The abdominal parietes are of course forcibly pulled into the vessel, while the tumour is drawn into the abdomen. The vessel is then removed by withdrawing the cork, and admitting the air. M. Hildenbrand has tried it repeatedly with great success, premising blood-letting, where inflammation is present. It cannot be used in cases of pregnancy, dropsy, or much corpulence. The Russians, likewise, employ the same process in uterine hemorrhage, and spasm, which they refer to a wrong position of the uterus.—*Svenska Läkare Salskapeto Handlingar.*

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Treatment of Nasal Polypus.—The operation of extirpating a nasal polypus is not a very gracious one, nor always successful; and we therefore mention the following as doing away with its necessity, *si probatim sit.*

M. Mayer says that the *marum verum* of Linnæus powdered, and taken as snuff in the quantity of five pinches a day, is effective in removing polypus of the nose. The powder is very astringent, and produces evacuations of blood from time to time, and ends by destroying the polypus. M. Mayer gives the case of a man who had had a polypus of the nose from the age of fifteen, and which, in spite of repeated extirpations, continued to recur, though he had consulted all the best surgeons in Germany, France, and Italy. The powdered *marum* produced a complete cure, after being used as snuff for a short time.—*Hauffland's Journ. Berlin.*

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M. Porta, *of Rome, on Cold Water in Poisoning with Opium.*—We can now settle the chronology of Mr. Wray's practice in cases of poisoning with opium; though we have not the slightest doubt that Mr.

Wray was quite unacquainted with Porta's case, which must have occurred at least six or seven years ago, though it is not dated. We give the case verbatim:—"Porta of Rome relates the following most remarkable case of a poisoning with opium being counteracted with cold water. Peruvian bark being prescribed for a pregnant woman, labouring under hysterics, spasms, and faintings, to be taken internally in decoction, and the powder of it to be injected per anum, she received by mistake powdered opium instead of it, of which three ounces were taken in three days. The consequence was a costiveness, against which 22 glysters proved ineffectual, and a meteorismus threatened a speedy dissolution. This dreary event being already expected, one of the consulting physicians fell upon applying fomentations to the abdomen, cold like ice, and to inject glysters of a similar nature. The glyster being just injected, fæces smelling strongly of opium were discharged, and the patient recovered."—*Continental Med. Repos.*

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Dr. Hufeland *on Antimonials in Inflammation.*—Before coming to this subject, M. Hufeland steps out of his way to attack our English practice in the exhibition of calomel, and we certainly think with a great deal of justice. We have heard Mr. Abernethy in his lectures say, that he would undertake to derange the health of a robust man by a simple dose of calomel, and yet we see it every day given to infants almost indiscriminately. From the time of Basil Valentin, who wrote the Triumphant Chariot of Antimony, it was used as the principal remedy in acute fevers. In the last century, Huxham founded his treatment of inflammatory diseases of the chest on his antimonial wine; and now Balfour, Hufeland, and others, seem to take credit for the discovery, or at least for the continuance of the remedy. Hufeland says, that under the form of tartar emetic, joined with nitre, ammonia, or simple oxymel, it will, "with certainty," cure all inflammatory diseases of the chest! This is certainly too much, even for the editor of the Berlin Gazette of Health, or Magazine of Medical Wonders, as we may well call it. He is not pleased, however, with the plan followed by M. Peschier, of Geneva (*See Quart. Journ.* IV. p. 116.), who substitutes it for blood-letting and blistering. M. Hufeland, on the contrary, always commences with the abstractions of blood, general or local, according to the case, and does not, like M. Peschier, prescribe empirically, in all cases, from six to fifteen grains in six ounces of some vehicle.—*Journal der praktischen Heilkunde.*

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M. Crane's *Case of Boulimia.*—A lady, aged 26, had her appetite morbidly increased that she took three or four pounds of meat at a meal, exclusive of bread and vegetables. She commonly vomited after each meal, and the ejecta were mixed with a glairy, albuminous, and sourish substance. Many physicians were consulted, and much medicine taken without the least effect. A continued fever at length supervened, and produced a complete disrelish for food; but as soon as it subsided, the boulimia returned as violent as ever. Dr. Crane inferred from this that there was a peculiar irritability of stomach

which was increased by food. He therefore tried, but with no success, to confine the patient to liquid aliment of a mild nature, such as milk and arrow root. He next tried soups and nutritive enemata. This was more effectual, and he gradually allowed bread and other solid food. In six weeks, the appetite became natural, and has now continued so for nine years.—Boulimia is often caused by organic malformations. M. Landrè-Beauvais gives a case of a phthisical patient who had been boulimious all his life; he died, and on dissection it was found that he had no gall-bladder and that the duodenum adhered to the liver. The intestines were unnaturally voluminous.—*Hufeland's Journ.* and *Diction. de Med.*

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Mr. Armstrong *on Metastasis of Rheumatism.*—A young soldier, slender and delicate, was seized with acute rheumatism of the superior extremities, with pyrexia, thirst, furred tongue, &c. He was immediately bled to twenty-four ounces, and had a brisk cathartic. Next day, as he was no better, the same quantity of blood was taken, and he was ordered a quarter of a grain of tartarized antimony every three hours. The day following, slightly better; the antimonial continued, and twelve grains of Dover's powder to be taken at bedtime. Next day still better, had a brisk dose of calomel and colocynth. Next day pain about the heart, for which he was bled and the antimonial continued. The pain about the heart, with great vascular action, induced Mr. Armstrong on the day following to take forty ounces of blood, which did not much affect the pulse or produce syncope. Next day digitalis was added to the antimonial, and thirty-six leeches were applied to the region of the heart. On the seventh day he died. The heart on dissection was found enlarged and the surface covered with coagulable lymph.—*Medical and Physical Journal.*

Dr. James Johnson, in giving an abstract of the case, judiciously remarks that detracting large quantities of blood in acute rheumatism, is very frequently productive of metastasis to internal organs and particularly to the heart. Large bleedings indeed, will not subdue either acute rheumatism or gout, as it will a common inflammation; and if it is not subdued, it will after the depletion be apt to assail some weak internal part. Dr. Johnson thinks Mr. Armstrong did not recur to local bleeding early enough, and it does not appear that he tried blisters or to affect the system with mercury.—*Medico-Chirurg. Review.*

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Dr. Yeats's *Case of a Painful Affection of the Brain.*—In February, 1819, a gentleman, aged forty, had symptoms of dyspepsia, which gradually began to affect the head. Laxatives, local blood-letting, and blisters, were tried, but with little relief, and the affection in the head increased, with deep-seated pain and heat, commencing at the back part of it, and becoming diffused over the whole cerebellum, often causing insufferable agony for two hours together. The crown and fore part of the head were not affected. The pain was most severe about four o'clock in the morning, and was aggravated by a horizontal position. On stooping he had confusion and giddiness. He would not submit to lose blood, as it already failed to relieve him.

A seton was therefore advised, and introduced by Sir A. Cooper. The patient was put on a low vegetable diet, and requested to keep *continually* in the erect position without going to bed, and to have his head, which was shaved for the purpose, unremittingly moistened with a cold lotion, consisting of a solution of muriate of ammonia, vinegar, and water. This was regularly persevered in for a week, with so great relief that he was gradually permitted to sleep in a horizontal posture. The seton was kept in for two months. The only medicines taken were occasional purgatives, and super tartrate of potass as a diuretic to carry off the effused serum which, according to Dr. Yeats, is always more or less present in the brain in such cases. The gentleman recovered, and continued well up to the last year, since which Dr. Yeats has not heard of him.—*Brande's Journ. of Science.*

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M. Richter *of* Moscow's *Case of Pregnancy, with Prolapsus Uteri.*—A woman, who had long laboured under a complete prolapsus uteri, it hanging down between the thighs, except when she lay in a recumbent position—became pregnant. The pendent uterus was observed to enlarge with the growth of the fœtus, but when she was gone about half her time, it retracted itself, and ascended upwards into the pelvis, so that about the seventh month not a vestige of the prolapsus was visible. On delivery, M. Richter found the orifice of the womb towards the left; the head entered the pelvis obliquely, and forcibly drove forth the left and anterior part of the lower segment, obstructing the passage of the urine. He made her assume a lateral posture, in order to obviate the oblique position of the uterus, and drew off the urine by a catheter, keeping back, during each pain, the parts which had been forced down. In this manner, he succeeded in effecting delivery. The prolapsus again appeared as soon as the patient was able to be out of bed.—*Petersburger Vermischte Abhandlungen.*

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M. Lavagna *on Ammonia as an Emenagogue.*—Since the time of Astruc, who asserted the rare success of emenagogues, it has been considered almost hopeless to try the medicines of this class, formerly in repute. M. Lavagna has endeavoured to revive the reputation of emenagogues by proposing the injection of ammonia into the vagina. He gives 14 cases of amenorrhœa, in which this succeeded, sometimes in twenty-four hours, and at most in five or six days, not only to produce the discharge, but to remove the paleness, the oppression, the difficulty of breathing, the anorexia, the weakness, &c. The same success was experienced in all sorts of temperaments, plethoric, bilious, pituitous, and their complications. The proportion employed was ten or twelve drops of alkali, in two spoonsful of warm milk, often repeated in the course of the day. It generally produced in the vagina a sensation more or less painful, according to the strength of the mixture and the sensibility of the part; but in no case was any thing dangerous or troublesome produced.—*Biblioteca Italiana.*

M. Magendie *on Strychnine and the Resin of Nux Vomica.*—The cases in which strychnine may be used, are, according to M. Magendie, general and local diseases of debility, particularly in all kinds of paralysis. The mode of employing it is in pills, containing from a twelfth to an eighth of a grain, and it is necessary, to make them keep, to cover them with gold or silver. The formula is

℞. Strychnii purissimi gr. ij.
Conserv. Rosar. ʒss.
M. et divide in pilul. xxiv.

For the Tincture of Strychnine:—

℞. Alcoholis (36° cent.) ℥j.
Strychnii gr. iij.
Dose from six to twenty-four drops.

The resinous extract of nux vomica has similar properties to the strychnine, but it has the disadvantage of varying in its medicinal strength; whereas the strychnine is uniform. M. Edwards cured with it a case of amaurosis, complicated with paralysis of the superior palpebra. M. Magendie has seen it useful in impotency, incontinence of urine, and in drowsy debility and dyspepsia. A single grain, in form of pill, given at night, is the dose for producing tetanic symptoms, though it may be increased from four to thirty-four grains, according to the quality of the medicine, and the strength of the patient. To produce the milder effects, half a grain, or a grain daily, is the proper dose. The tincture is prepared thus:—

R. Alcoholis (36° cent.) ℥j.
Extract. Sicc. Nuc. Vomicæ, gr. iij. [*Formulàire.*

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Dr. Helenus Scott *on the Guinea Worm.*—Dr. Scott has given a very interesting account of the formidable dracunculus of the tropics. He says that it breeds in the moist earth during the rainy season, and that a medical friend of his saw a native gardener dig up a number of these worms on the coast of Malabar, of which he collected a number, and preserved them in spirits. There could be no doubt of the identity of the animal with that found in the human body. It is probable that the eggs or young of the Guinea Worm live in water, or moist places; and hence the Indians, who walk barefooted, are much infested with them. The cellular membrane under the cutis is its proper nidus; but it often goes deep into the cellular substance between the muscles, as in the socket of the eye, the mouth, the cheeks, or below the tongue. The first symptom of it is a small blister, which, when broken or irritated, produces intolerable itching over the whole body, so as almost to drive the person mad. Dr. Scott, in this case, describes his own feelings while suffering under this intolerable itch. When the animal has been partly extracted, it has not the power of retracting itself, though it has of advancing—a circumstance of the greatest importance in practice; for if it is wound, as is often done, round a quill, and secured, it irritates the animal; and as it seems to have the power of communicating its disa-

greeable feelings to the patient, it is often productive of troublesome consequences. It is elastic, but it ought never to be stretched. The native surgeons try to trace its convolutions under the skin, and, cutting down upon it, are often able to extract it at once, if in a soft part; but when it is on the hands or feet, and warped round a bone, this is impossible, and its extraction may be tedious, and even dangerous. It is best to draw out as much of it as will come easily, and cut it all off but about a quarter of an inch, over which a poultice may be put. This does not kill it, but it sometimes dies, and produces inflammation and abscess in the part. It will, of its own accord, come out slowly, like the hour hand of a watch. When extracted, it soon becomes stiff, and dies.—*Medico-Chirurgical Review.*

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M. Legras *on Syrup of Acetate of Morphine.*—Dissolve four grains of acetate of morphine in an ounce of distilled water, cold; and add fifteen ounces of common syrup. The transparency will not be altered; the taste will be slightly bitter, and leave a slight astringency in the throat. The salt itself ought at first to be employed in small doses, such as the eighth of a grain. Six drachms, divided in doses, of the syrup of morphine, prepared as above, M. Legras says, has cured a diarrhœa which had continued many months. The salt employed to the extent of a grain a day has never been observed to produce any symptoms of narcotism, though often employed in the dose of two drachms.—*Cercle Medicale.*

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Gas Lighting in London.—The length of streets already lighted in this metropolis with gas is 215 miles! and the three principal companies light 39,504 public lamps, and consume annually about 33,158 chaldrons of coals.

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On the Electricity produced by Pressure.—A very important paper, on the development of electricity by pressure, and the laws of that development, by M. Becquerel, is to be found in the *Annales de Chimie*, xxii. 5. We cannot do more at present than translate the summary given at the conclusion of the paper.

It is seen, then, that all bodies assume two different electric states by pressure: that, in two bodies being perfect conductors, this state of equilibrium ceases, at the moment the pressure is removed, but if one be a bad conductor, the effect of the pressure continues for a longer or shorter time: that the pressure alone maintains the equilibrium of the two fluids, placed on each of the surfaces; for if the pressure be diminished, and, at the end of a certain time, the bodies be removed from the compression, they will be found to have the electricity, due only to the last or remaining pressure: that heat modifies the development of electricty in a particular manner: that the intensity of the electricity increases, at first, directly as the pressure; and that it is probable this proportion diminishes at high pressures, as the bodies lose their power of being compressed: finally, it is rendered probable, that the light which is disengaged in powerful concussions, is due to the rapid recombination of the two electric fluids developed on the surfaces at the moment of compression.—*Journal of Science.*

Light evolved by Pressure.—We extract the following passage from the paper above referred to. Considering the increased development of electricity in bodies, by the augmentation of pressure, ought we not to refer to this cause certain luminous phenomena, of which the origin is as yet unknown? For instance, it is said, that in the Polar Seas, it frequently happens, that the blocks of ice which strike together evolve light. These enormous blocks arriving one against the other, with considerable motion, will be submitted to great pressure, and thus the two blocks be placed in two different electric states. At the moment the compression ceases, the two fluids will recombine, in consequence of the conducting power of the ice; and may not the light disengaged be the result of the combination of the electric fluids?*

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A new Fluid discovered in Minerals.—A new fluid, of a very singular nature, has been recently discovered by Dr. Brewster, in the cavities of minerals. It possesses the remarkable property of expanding about thirty times more than water; and, by the heat of the hand, or between 75° and 83°, it always expands so as to fill the cavity which contains it. The vacuity which is thus filled up is of course a perfect vacuum, and, at a temperature below that now mentioned, the new fluid contracts, and the vacuity re-appears, frequently with a rapid effervescence. These phenomena take place instantaneously in several hundred cavities, seen at the same time. The new fluid is also remarkable for its extreme volubility, adhering very slightly to the sides of the cavities, and is likewise distinguished by its optical properties; it exists, however, in quantities too small to be susceptible of chemical analysis. The new fluid is almost always accompanied with another fluid like water, with which it refuses to mix, and which does not perceptibly expand at the above-mentioned temperature. In a specimen of cymophane, or chrysoberyl, Dr. Brewster has discovered a stratum of these cavities, in which he has reckoned, in the space of one-seventh of an inch square, 30,000 cavities, each containing this new fluid, a portion of the fluid like water, and a vacuity besides. All these vacuities simultaneously disappear at a temperature of 83°.

If such a fluid could be obtained in quantities, its utility in the construction of the thermometers and levels would be incalculable. There are many cavities in crystals, such as those opened by Sir Humphry Davy, which contain only water, and which, of course, never exhibit any of the properties above described. An account of these results was read before the Royal Society of Edinburgh, on the 3d and 17th of March.—*Edin. Phil. Jour.* viii. 400.

[We have seen a most curious and satisfactory specimen of amethyst quartz, containing the fluid above described by Dr. Brewster, in the collection of Thomas Allan, Esq. of Edinburgh. It exhibits three distinct oblong cavities, which, when the crystal is very slightly warmed, are to all appearance empty, but, upon cooling it by immersion in water, or by holding it against any cold substance, a portion

* See also the light from the falling of a glacier, ix. p. 426.

of liquid is immediately perceived in each of the cavities, which gradually disappears as the crystal becomes less cold. The appearances are such as one might expect would arise from very highly condensed carbonic acid contained in the bubbles, assuming alternately the liquid and gaseous form, by very slight elevations and depressions of temperature.—Ed.]

Blumenbach on Irritability of the Tongue.—I had the tongue of a four year old ox which had been killed in the common way, by opening the large vessels of the neck, cut out in my presence while yet warm, and at the same time, the heart, in order that I might compare the oscillatory motion of this organ, which is by far the most irritable that we are acquainted with, with the motion of the tongue; and, when I excited both viscera at the same time, by the same mechanical stimuli, namely, incisions with a knife and pricks of a needle, the divided tongue appeared to all the bystanders to survive the heart more than seven minutes, and to retain the oscillation of its fibres altogether for a quarter of an hour; and so vivid were the movements when I cut across the fore part of the tongue, that the butcher's wife compared them to those of an eel in similar condition, quite in the way that Ovid has compared them to the motions of the tail of a mutilated snake.—*Edin. Phil. Jour.* VIII. 263.

Preservation of Anatomical Preparations.—Dr. Macartney, of Dublin, employs for this purpose a solution of alum and nitre, which preserves the natural appearance of most of the parts of the body much better than spirit of wine, or any other liquid hitherto employed. In order to impregnate entirely anatomical preparations, the liquid ought to be renewed from time to time at first. The proportion of the two salts and the strength of the solution should vary according to circumstances. The solution possesses such an antiseptic power that it destroys completely, in a few days, the fœtor of the most putrid animal substances.—*Ann. de Chim.*, xxi. 223.

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